INSTALLATION INSTRUCTIONS
MFS80, MFS100, MFS125, MFS180, MFS230, MFS275
COMMERCIAL WASHER

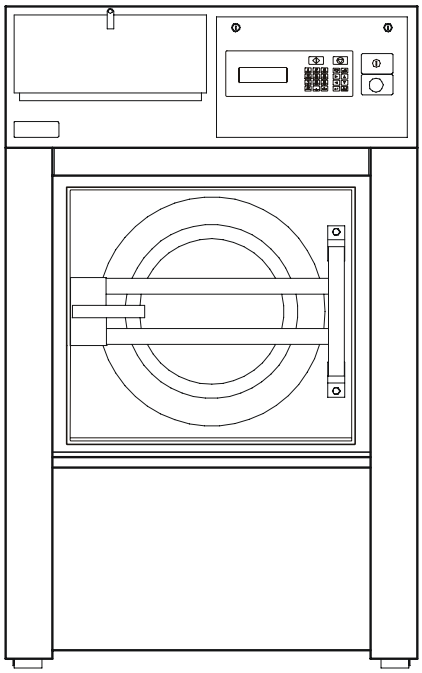

TABLE OF CONTENTS

WASHER SAFETY 2
INSTALLATION REQUIREMENTS 3
Tools, Parts, and Equipment 3
Location Requirements 3
Electrical Requirements..... 6
Water Supply Requirements 7
Drain Requirements 7
INSTALLATION INSTRUCTIONS 8
Transport, Handling, Inspection, and Storage 8
Moving to Final Location 8
Water, Drain, and Venting Connections 9
Electrical Connection 10
Remove Shipping Brackets 13
Complete Installation 15
Break-In Period 15
Controls Troubleshooting 15
WASHER MAINTENANCE 16
Maintenance Schedule..... 16
Vibration Switch Adjustment and Function Test 17
Belt Inspection, Adjustment, and Replacement..... 18
Tightening Moments..... 19
Lubrication..... 20
Water and Steam Filters..... 20
Thrust of Door Seal 21
Spring Unit 22
Fuse Capacities..... 22
Earth Leakage Trips..... 22
TROUBLESHOOTING 23
REMOVING THE WASHER FROM SERVICE..... 24
DIMENSIONS AND TECHNICAL SPECIFICATIONS..... 25
Models MFS80, MFS100, and MFS125 25
Dimensions and Connections 26
Torque Specifications..... 26
Technical Specifications..... 27
Model MFS180 29
Dimensions and Connections 30
Torque Specifications..... 30
Models MFS230 and MFS275 31
Dimensions and Connections 32
Torque Specifications..... 32
Technical Specifications
(Models MFS180, MFS230, and MFS275) 33
Models MFS230 and MFS275
with Tilting Feature..... 35
Dimensions and Connections 35
Technical Specifications 35

W10214569B
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WASHER SAFETY

Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.

This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word “DANGER” or “WARNING.” These words mean:

⚠ DANGER — **You can be killed or seriously injured if you don't immediately follow instructions.**

⚠ WARNING — **You can be killed or seriously injured if you don't follow instructions.**

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

IMPORTANT SAFETY INSTRUCTIONS

WARNING: To reduce the risk of fire, electric shock, or injury to persons when using the washer, follow basic precautions, including the following:

- Read all instructions before using the washer.
- Do not wash articles that have been previously cleaned in, washed in, soaked in, or spotted with gasoline, dry-cleaning solvents, other flammable, or explosive substances as they give off vapors that could ignite or explode.
- Do not add gasoline, dry-cleaning solvents, or other flammable, or explosive substances to the wash water. These substances give off vapors that could ignite or explode.
- Under certain conditions, hydrogen gas may be produced in a hot water system that has not been used for 2 weeks or more. HYDROGEN GAS IS EXPLOSIVE. If the hot water system has not been used for such a period, before using the washing machine, turn on all hot water faucets and let the water flow from each for several minutes. This will release any accumulated hydrogen gas. As the gas is flammable, do not smoke or use an open flame during this time.
- Do not allow children to play on or in the washer. Close supervision of children is necessary when the washer is used near children.
- Before the washer is removed from service or discarded, remove the door or lid.
- Do not reach into the washer if the drum, tub or agitator is moving.
- Do not install or store the washer where it will be exposed to the weather.
- Do not tamper with controls.
- Do not repair or replace any part of the washer or attempt any servicing unless specifically recommended in this manual or in published user-repair instructions that you understand and have the skills to carry out.
- See “Electrical Requirements” for grounding instructions.

SAVE THESE INSTRUCTIONS

IMPORTANT:

- This washer must be directly wired to the electrical system and may not be attached with a plug.
- The circuit must be a dedicated circuit and may not be combined with any lighting circuit.
- Adequate grounding is essential to washer operation.

INSTALLATION REQUIREMENTS

Tools, Parts, and Equipment

Read and follow the instructions provided with any tools listed here.

Tools Needed

Washers must be installed by professional installers, who should have a full compliment of standard SAE and metric hand tools, and specialized tools as required. Gather the required tools and parts before starting installation.

Additional Materials

Additional materials may be required for this type of installation and the customer is responsible for supplying additional hardware and adapters as necessary.

Parts Supplied

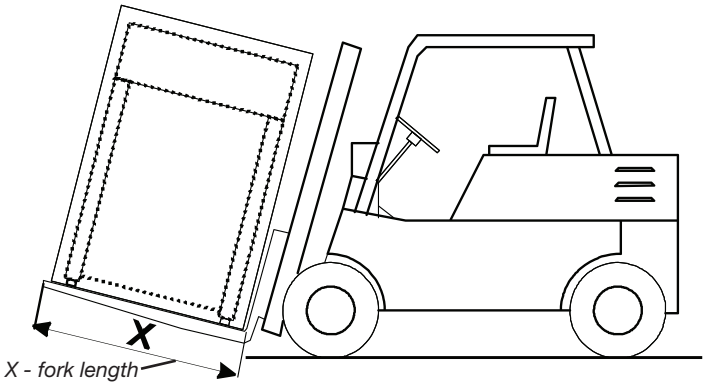
Remove parts bag from washer drum. Check that all parts were included. The number of parts supplied varies with model.

- Molded rubber drain hose and band clamp (2 each)
- Rubber washers for the hoses (4)
- Water supply hoses (2)

Equipment for Handling, Transport, and Storage

Use a lift truck or a manual skid cart for handling the washer when it still is in the packaging material.

- The lift truck forks must be at least 4" (100 mm) longer than the length of the washer frame.



Required Fork Length Chart

X	80 lbs/100 lbs/125 lbs (33 kg/40 kg/55 kg)	180 lbs (80 kg)	230 lbs/275 lbs (104 kg/125 kg)
Fork Length	59" 1500 mm	71" 1800 mm	79" 2000 mm

- If possible, leave the washer in the packaging or on wooden skid until foundation is prepared for installation. Washer is attached to skid by four (4) M-16 bolts.
- See “Moving to Final Location” for more information on moving washer to its final location.

Location Requirements

Washers must be installed on a level concrete floor on the ground level of a building. Washers should not be installed on a floor other than the ground floor, or in a room with a basement or on a floor with rooms below without approval of a structural engineer.

Proper installation is your responsibility and must meet all governing codes and ordinances.

Working Conditions

- Washers should not be installed within reach of spraying water.
- Do not install washer where it will be exposed to weather or excessive humidity. Do not allow water or condensation to run over walls or floor under washer. Ambient temperature for storage or transportation must be between -13 and 131°F (-25 and 55°C).

Floor

Space requirements for installations are determined by the number of washers being installed. See “Technical Specifications” and “Installation Instructions” for more detailed information.

- Installation must be on a solid concrete floor or slab capable of withstanding the weight and vibration produced by the washer. The maximum slope of the floor is 1° under the washer. A rough, uncovered concrete surface is preferable to a smooth or covered surface.

Weight of Washers

Weight on floor	80 lbs 33 kg	100 lbs 40 kg	125 lbs 55 kg	180 lbs 80 kg	230 lbs 104 kg	275 lbs 125 kg
Maximum static load (with linen and water)	3239 lbs 1469 kg	4083 lbs 1852 kg	4400 lbs 1996 kg	7144 lbs 3241 kg	–	–
Maximum dynamic load (alt. stress when extracting)	2855 lbs 1295 kg ±616 lbs ±279 kg	3615 lbs 1640 kg ±661 lbs ±300 kg	3835 lbs 1740 kg ±704 lbs ±319 kg	6176 lbs 2801 kg ±1511 lbs ±685 kg	–	–
Dynamic load frequency	14.0 Hz	14.0 Hz	14.0 Hz	12.5 Hz	–	–

- Washer must be secured with four (4) M16 x 160 mm anchoring bolts. Install all four anchors before final installation of the washer. Apply a torque of 210 Nm/ 155 ft. lbs.
- Washer will be firmly secured to the floor and all four (4) footings must touch the floor.
- Allow for adequate sanitary sewer drainage, located behind the washers.

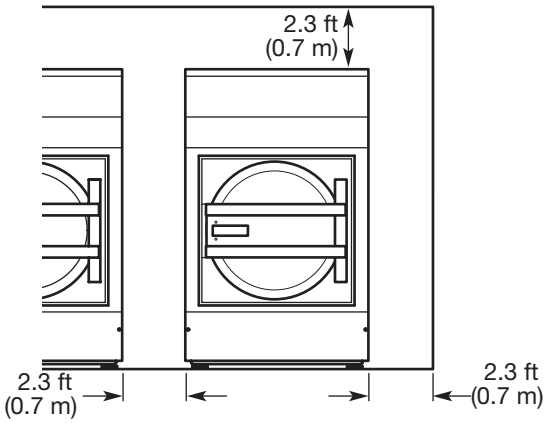
Water and Electric

- A hot water heater set at 158°F (70°C).
- 1" (25 mm) inlet valves for hot and cold water. Determine water hardness levels. Hard or medium levels may require a water softener.
- A dedicated, GFCI-equipped circuit for each washer (see “Electrical Requirements”).

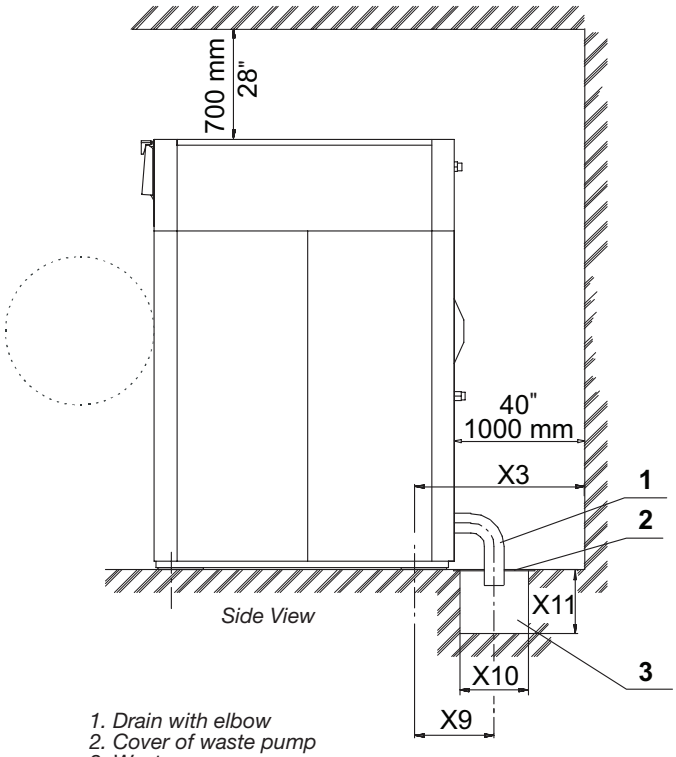
Spacing

- Washers require 2.4 ft (0.7 m) above the top for maintenance.
- Washers require 2.4 ft (0.7 m) (Models MFS80/MFS100/MFS125) and 2.6 ft (0.8 m) (Models MFS180/MFS230/MFS275) between the sides for maintenance and maximum door clearance.
- Allow 3.3 ft (1 m) behind washer and the wall for maintenance.

Models MFS80, MFS100, MFS125



Front View



Side View

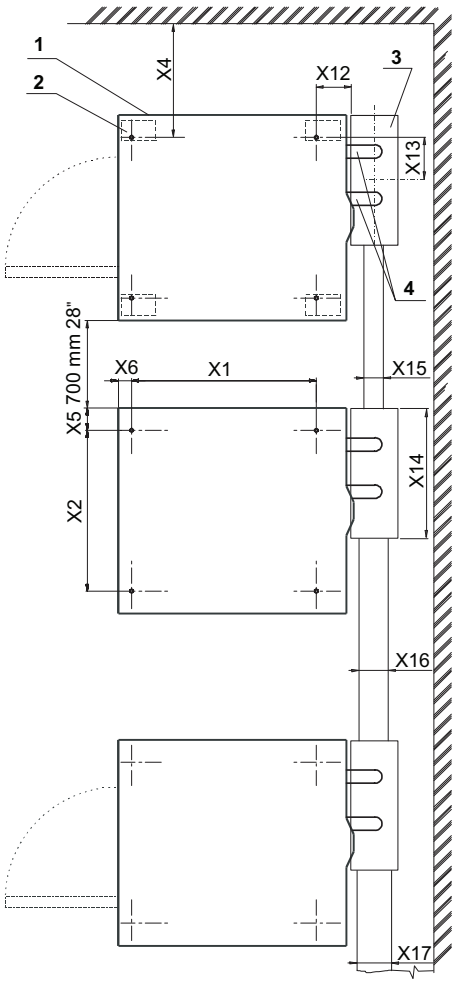
1. Drain with elbow
2. Cover of waste pump
3. Waste sump

Dimensions

X3	46.25" (1175 mm)
X9	14" (350 mm)
X10	12" (300 mm)
X11	9" (250 mm)

Spacing Between Multiple Washers and Feet Placement

Models MFS80, MFS100, MFS125

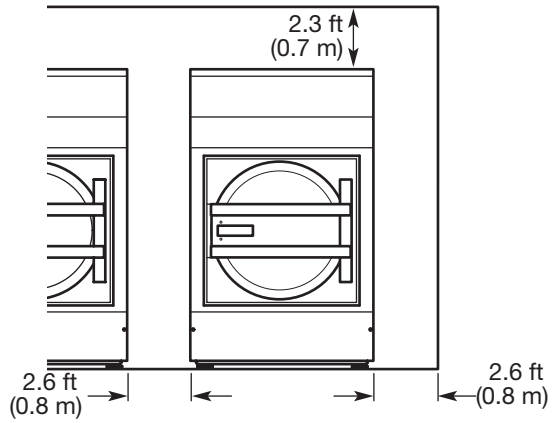


1. Washer contour line
2. Washer foot
3. Waste sump
4. Drain with elbow

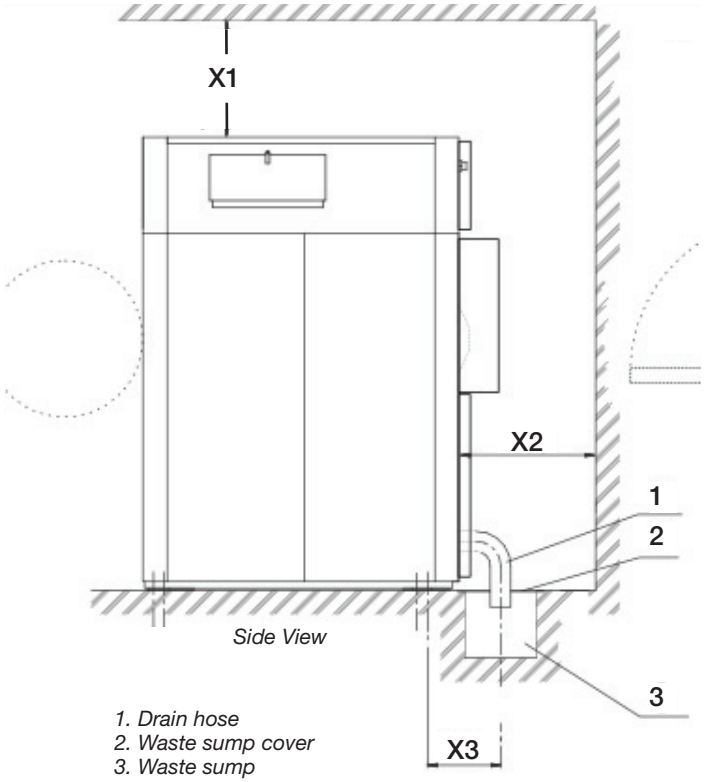
Feet Placement

Distance	MS80	MS100	MS125
X1	38.19" (970 mm)	42.13" (1070 mm)	49.21" (1250 mm)
Distance	**All Models**		
X2	36.61" (930 mm)		
X4	32.7" (830 mm)		
X5	5.12" (130 mm)		
X6	3.03" (77 mm)		
X12	8" (200 mm)		
X13	9" (250 mm)		
X14	29.5" (750 mm)		
X15	6" (150 mm)		
X16	7" (180 mm)		
X17	8" (200 mm)		

Models MFS180, MFS230, MFS275

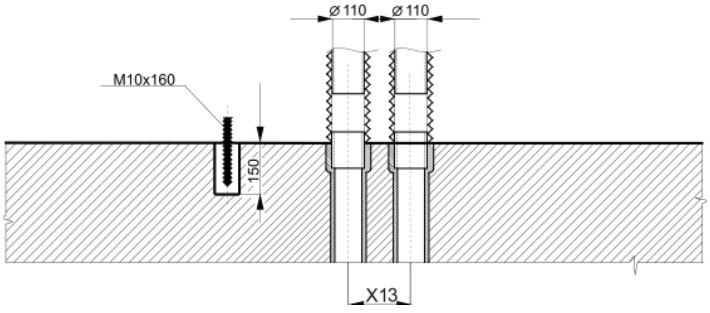


Front View



Side View

1. Drain hose
2. Waste sump cover
3. Waste sump

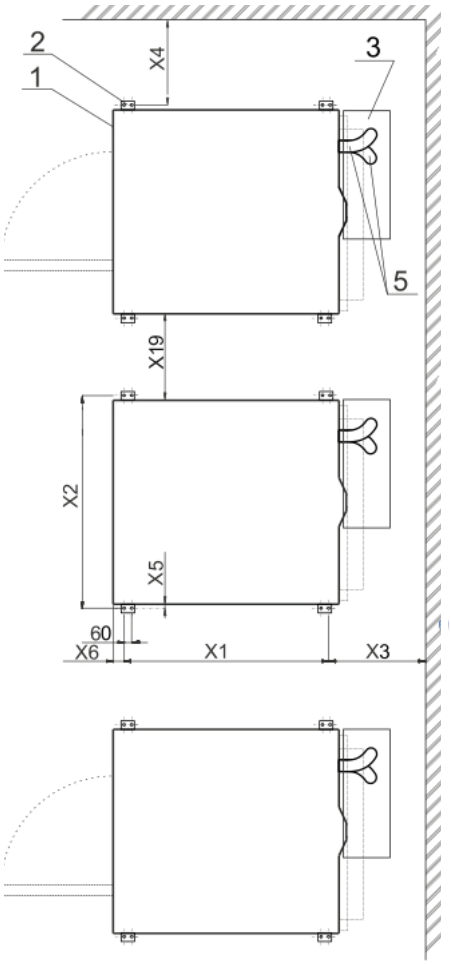


Dimensions

X1	27.55" (700 mm)
X2	39.36" (1000 mm)
X3	16.33" (415 mm)
X13	9.84" (250 mm)

Spacing Between Multiple Washers and Feet Placement

Models MFS180, MFS230, MFS275



1. Washer contour line
2. Washer foot
3. Waste sump
4. Drain hose

Feet Placement

Distance	MS180	MS230	MS275
X1	49.99" (1270 mm)	54.64" (1388 mm)	55.11" (1400 mm)
X2	56.29" (1430 mm)	67.51" (1715 mm)	70.07" (1780 mm)
X3	41.92" (1065 mm)	52.44" (1332 mm)	52.44"" (1332 mm)
X4	30.70" (780 mm)	30.70" (780 mm)	30.70" (780 mm)
X5	0.78" (20 mm)	0.53" (13.50 mm)	0.59" (15 mm)
X6	5.9" (150 mm)	5.11" (130 mm)	5.19" (132 mm)
X19	27.55" (700 mm)	31.49" (800 mm)	31.49" (800 mm)

Product Dimensions

See “Technical Specifications” for specific measurements on each washer size.

Electrical Requirements

It Is Your Responsibility:

- To contact a qualified electrical installer.
- To be sure that the electrical connection is adequate and in conformance with the National Electrical Code, ANSI/NFPA 70-latest edition, or Canadian Electrical Code CSA C22.1, and all local codes and ordinances.

  A copy of the above code standards can be obtained from:

  National Fire Protection Association, One Batterymarch Park,Quincy, MA 02269.
- To supply the required 3 or 4 wire, three-phase, 208–240 volt, 50/60 Hz., AC electrical supply on a separate circuit. Circuit capacity is dependent on washer size and connection type and is shown in the table below. A time-delay fuse or circuit breaker is recommended. Installation of a GFCI (Ground Fault Circuit Interrupter) is also recommended. Connect to an individual branch circuit. Do not fuse the neutral or grounding circuit.

Electrical Connection

⚠WARNING

Fire Hazard

Use appropriate gauge of solid copper wire as specified in the "Manufacturer's Recommended Minimal Conductor Section" chart.

Use the provided strain relief.

Disconnect power before making electrical connections.

Connect neutral wire (white) to terminal labelled N.

Ground wire (green or bare wire) must be connected to ground connector labelled PE.

Connect remaining 3 supply wires to remaining 3 terminals labelled L1 (U), L2 (V), and L3 (W).

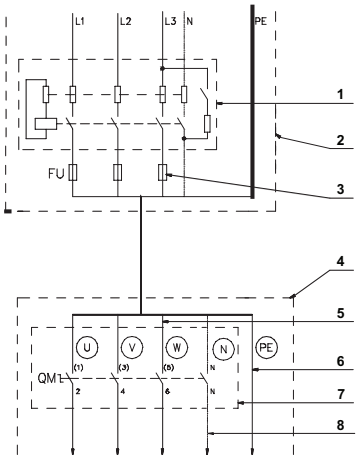
Securely tighten all electrical connections.

Failure to do so can result in death, fire, or electrical shock.

The electrical connections were designed per the specifications provided during the ordering process. Before connecting, verify the voltage and frequency on the washer label. See the Back View in "Dimensions and Technical Specifications" to ensure that the voltage and frequency correspond to your power network. The connection is described in the illustration below. If the washer is not equipped with a main switch, power disconnects are needed for all electrical supplies connected to the washer, in accordance with item 5.3 in standard EN 60204-1.

Washer Connection to Electrical Network (With an Earth Leakage Trip)

1. *Earth leakage trip*
2. *Laundry electrical main switch*
3. *Power supply protection*
4. *Washer*
5. *Phase conductors*
6. *Protective conductor*
7. *Main switch inlet terminal switchboard*
8. *Neutral conductor*



Inlet Conductors and Power Supply Protection

Inlet conductors of the washer connection to the electrical network must have copper cores. The cross section of the inlet conductors depends on the voltage and the unit heating type, i.e. total electrical input. Circuit breakers or fuses in the laundry switchboard keep the inlet cable from short-circuiting and overloading.

Manufacturer's Recommended Minimal Conductor Section

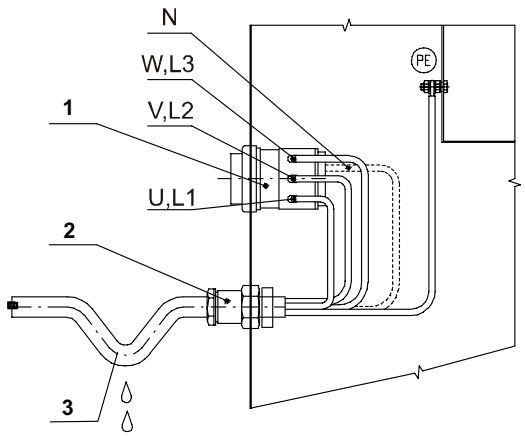
Power supply protection device nominal current (US)		Min. phase conductor section in mm² (AWG)	Min. protective conductor section in mm² (AWG)
Automatic circuit breakers	Fuses		
16A (15A)	10A (10A)	1.5 mm² (AWG 15)	1.5 mm² (AWG 15)
20A (20A)	16A (15A)	2.5 mm² (AWG 13)	2.5 mm² (AWG 13)
25A (–)	20A (20A)	4 mm² (AWG 11)	4 mm² (AWG 11)
40A (40A)	32A (30A)	6 mm² (AWG 9)	6 mm² (AWG 9)
63A (–)	50A (50A)	10 mm² (AWG 7)	10 mm² (AWG 7)
80A	63A	16 mm²	16 mm²
100A	80A	25 mm²	16 mm²
125A	100A	35 mm²	25 mm²

See "Technical Specifications" for the corresponding current.

- A separate grounding wire is recommended if codes permit. It is recommended that a qualified electrician determine the grounding path is adequate.

NOTE: Connecting these washers to an IT power supply requires special consideration.

Connection of the Main Power Inlet



1. Main switch
2. Strain relief
3. Sag of inlet cable

Connection to Washer

These washers were designed for direct wiring into the power supply. The washer must be electrically grounded in accordance with all local codes or, in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, latest edition, or Canadian Electrical Code, CSA C22.1.

Direct Wire Installation:

Power supply cable must match power supply (4-wire or 3-wire) and be:

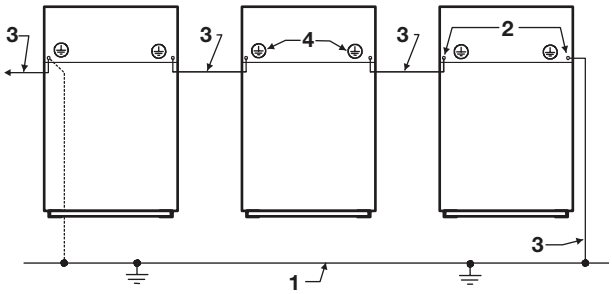
- Flexible armored cable or nonmetallic sheathed copper cable (with grounding wire), in a flexible metallic conduit, to avoid conductor breakage due to vibration. All current-carrying wires must be insulated.
- Copper wire of appropriate gauge for amperage requirement (see “Manufacturer’s Recommended Minimal Conductor Section”). Stranded wire is recommended. Do not use aluminum wire.

Equipotential bonding:

In addition to an equipment-grounding conductor that must be run with the circuit conductor and be connected to the equipment grounding terminal, all washers or appliances in the vicinity must be permanently interconnected with a connector.

The external connection points serve for this purpose. See illustration below.

The cross-sectional area of the conductor must be at least electrically equivalent to the cross-sectional area of the copper conductor.



1. *Protective grounding structure*
2. *External protective conductor connection point*
3. *Protective conductor*
4. *Grounding identification*

Water Supply Requirements

Water supply requirements are as follows:

- Valved hot and cold water supply with a water pressure between 14.5 and 116 PSI (100–800 kPa). Water pressure between 43 and 73 PSI (300–500 kPa) is recommended.
- A hot water heater or boiler supplying an adequate amount of water between 120–160°F (49–80°C). The water temperature within the washer is controlled to a maximum temperature that is set in the program. The amount of hot water required to wash a load of laundry is dependent on many factors, including the hot and cold water temperature and the wash program selected. Average amounts of hot water required to wash one load of laundry are shown in the table below.

Hot Water Requirement Per Load	
Washer Model	**Hot water per load***
MFS80	60 gal. (227 L)
MFS100	70 gal. (265 L)
MFS125	80 gal. (303 L)
MFS180	–
MFS230	–
MFS275	–

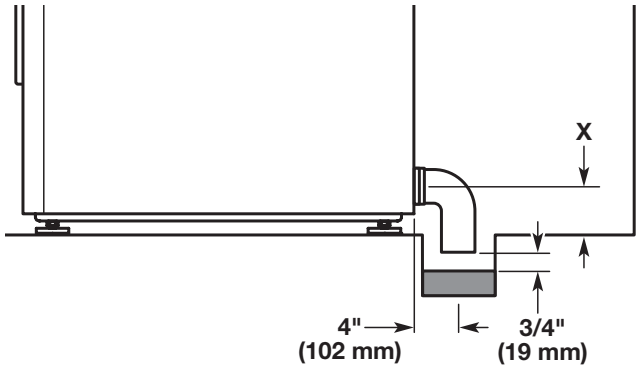
*Approximate values. Assumes 140°F (60°C) hot water supply and 70°F (21°C) cold water supply.

Drain Requirements

The washers have two 3" (76 mm) water drains on their rear side. To connect the drains to a drain hose, use the 3" (76 mm) elbow which is supplied with the washer. Secure the elbow with a clamp. To maintain washer performance, do not reduce the diameter of the drain pipe.

The washer may drain into a waste channel or directly to a drain.

- The waste channel cannot be located under the washer. There should be at least 4" (102 mm) between the back of the washer and the middle of the waste channel (see illustration below).
- The waste channel must be lower than the drain pipe. There should be at least a 3/4" (19 mm) air gap between the bottom of the drain and the water level in the channel.



Minimum Waste Channel Measurements

	MFS80/100/125	MFS180/230/275
X	4" (102 mm)	4" (102 mm)

INSTALLATION INSTRUCTIONS

Transport, Handling, Inspection, and Storage

⚠WARNING

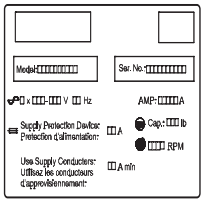
Excessive Weight Hazard

Use two or more people and mechanical equipment to lift, move and install washer.

Failure to do so can result in back or other injury.

NOTE: Refer to "Equipment for Handling, Transport, and Storage" under "Tools, Parts, and Equipment" for proper handling of washer.

1. Inspect carton for damage. Inspect washer if carton shows signs of damage. Do not remove washer from pallet.
2. Verify model number and serial number on the data plate with your order. Remove accessories and manuals from inside washer drum.
3. Store inside in a temperature controlled environment -13° and 131°F (-25° and 55°C). Do not expose washer to the weather. Humidity levels must be between 30 to 90% without condensation.



Data Plate

IMPORTANT: Make sure that all components are secured during transportation and installation.

Moving to Final Location

IMPORTANT:

- Make sure all passages and spaces through which the washer will be moved to its installation location are high enough and wide enough for the washer and its packaging.
- Do not push, pull, or press the parts protruding from the washer (front section, door, control panel, belt cover, water inlet, outlet pipes, etc.).
- To avoid damage during handling and installation, make sure all protruding parts are secured.

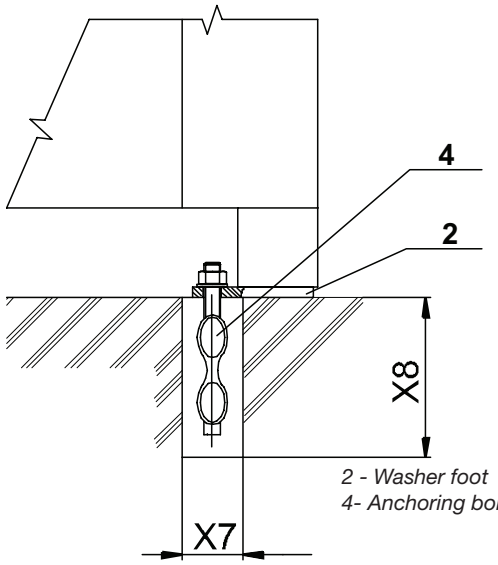
1. Move the washer near the point of installation with a lift truck and remove packing material.
2. Loosen the 4 - M16 x 160 mm bolts attaching the washer to the pallet and gently lift washer.

IMPORTANT: Washer is very heavy. Consider equipment and manpower required to move this washer prior to installation and be sure that all necessary preparations are made.

Fastening Washer to Concrete Floor

1. Washer is to be attached to the concrete floor with anchor bolts. All four footings must come into firm contact with the floor.
2. Level washer's base frame with a level.
3. Do not tighten nuts of the anchor bolts until the concrete floor or base has completely cured.
4. Tighten the nuts of the anchoring bolts to a maximum 155 lbf.ft/210 Nm for the bolts on Models MFS80, MFS100, and MFS125. For Models MFS180, MFS230, and MFS275 tighten the nuts of the anchoring bolts to a maximum of 36 lbf.ft/49 Nm.
5. See "Dimensions and Technical Specifications" section for installation measurements.

Models MFS80, MFS100, MFS125

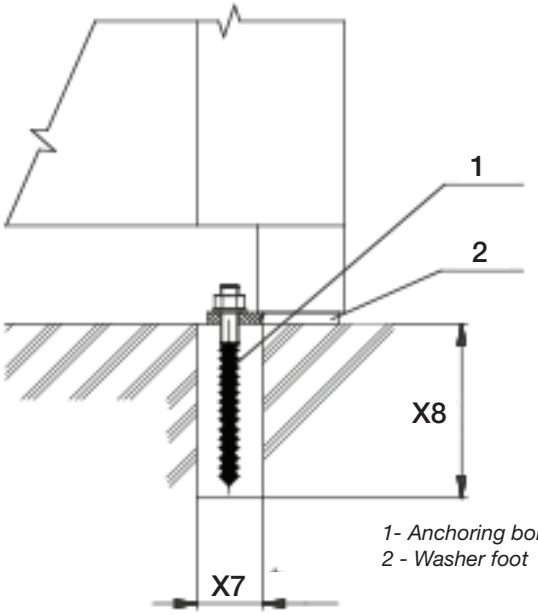


2 - Washer foot
4- Anchoring bolt

Bolt Dimensions

X7	1.57" (40 mm)
X8	5.9" (150 mm)

Models MFS180, MFS230, MFS275



1- Anchoring bolt
2 - Washer foot

Bolt Dimensions

X7	2.36" (60 mm)
X8	6.3" (160 mm)

Water, Drain, and Venting Connections

Water Hardness

Determine the water hardness level in water supply. Good wash results are dependent on water hardness. In areas that have medium and very hard water levels, a water softener may be required. Contact your water or soap distributor for determining the proper soap and detergents to be used with your hardness levels for the best wash results.

Water Supply Connections

Washers have 2 water inlets. For connection dimensions, see “Dimensions and Technical Specifications.”

1. Always use the flexible hoses delivered with the washer. Do not use a fixed connection to the water supply.
2. Keep proper water pressure within range. See “Dimensions and Technical Specifications.”
3. Connect all water inlets to a water supply. Contact your dealer if there is no hot water supply available.
4. 1" (25 mm) or 1.5" (38 mm) Inlet valves for hot and cold water use inlet pressure hoses with gaskets. Mount shut-off valves to the water supply pipes for cleaning filters and performing maintenance.
5. To connect the washer to the water inlet shut-off valves, use the provided flexible hoses.

Steam Connections

Washer with steam heating is equipped with an outer thread in the back of the washer for connection with the washer steam line. See “Dimensions and Technical Specifications” for more details.

IMPORTANT:

- Install a steam supply disconnecting device near each washer.
- Inlet value of steam pressure must be within range. Any other pressure may result in washer not functioning properly.
- To avoid possible injuries, shut off the main steam inlet and let the parts cool down after connection.
- Insert a filter with permeability up to 300 micrometers in front of every steam valve. Dirt particles larger than 300 micrometers can damage the steam valve and cause leakage.
- Attach steam filter to the washer at the connection point. The supply piping must be clean without dirt and rust particles. Impurities in the supply line can cause steam valves to fail.
- Do not twist the filter gasket when connecting the pipes. To shut off the assembly, clamp the filter at the side of the connecting pipe.

Drain Connections

MFS80, MFS100, and MFS125 washers are equipped with two 3" (75 mm) diameter drain pipes. MFS180, MFS230, and MFS275 washers are equipped with two 4" (100 mm) diameter drain pipes. See “Dimensions and Technical Specifications” for location. Both pipes must be connected to the waste sump. The sump must be positioned lower than the drain, because the washer uses gravity to discharge water. Use the provided drain hose to connect drain pipes to sump. Secure with a clamp and properly cover sump. The capacity of discharged water for each washer model is 300.00 dm^3/min and 80.00 gal/min for the 3" drain. For the 4" drains, the capacity of discharged water for each washer model is 540.00 dm^3/min and 142.00 gal/min.

Recycled Water Drain Connection (some models)

Attach connecting hoses to the discharging valve located on the right side (from rear view). The hoses go to your recycling tank located below the drainage valve. The tank must be large enough for the total weight and volume of water and made up of materials which withstand 176°F (80°C) and the effects of laundry soap. The quantity of water will vary by washer size and cycle.

Venting

IMPORTANT: To maintain proper venting, do not cover the washer vent.

Although not recommended, it is possible to connect vent to the laundry central exhaust ducts. Venting materials must withstand a temperature of 176°F (80°C). Always use flexible vent material if a connection is made. The central vent for multiple washers must be dimensioned for the total cross section of all vents and washers. Calibrate washer’s “zero” level after vent has been attached.

Electrical Connection

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

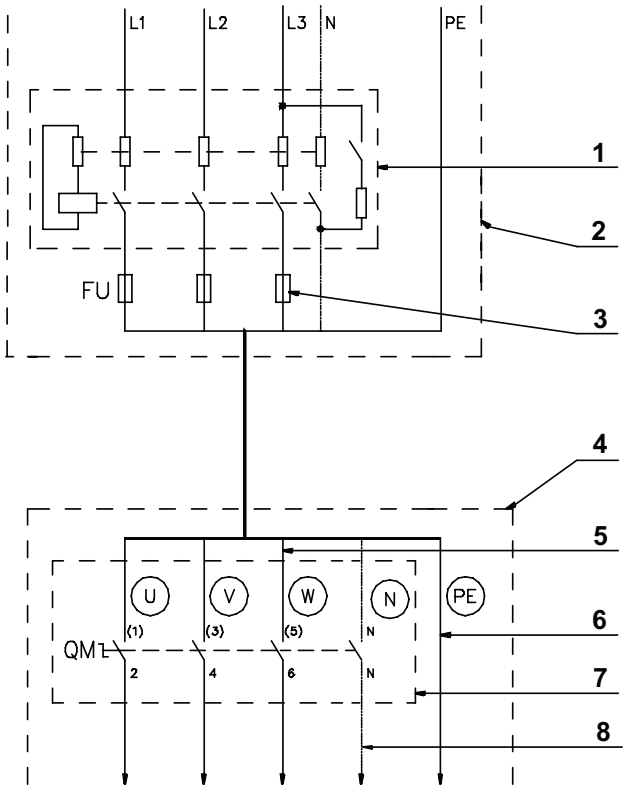
Failure to do so can result in death or electrical shock.

Check the data plate to determine electrical requirements. Before making the electrical connection, make sure the voltage and frequency listed on the data plate matches your electrical network. Each washer must be on an individual branch circuit. To ensure uninterrupted electrical current, a residual current device (RCD) and a circuit breaker must be installed in the building's electrical system for each washer. The proper connection is described in the illustration on the right.

IMPORTANT:

- If the washer is not equipped with a main switch, supply disconnecting devices need to be installed in accordance with EN 60204-1 standard 5.3.
- Make sure the supply voltage is always within the limits specified in "Technical Specifications." If the electrical installation requires long distances to travel, it may be necessary to use larger cables to reduce the voltage drop.

Washer Connection to Electrical Network (with a residual current device)



1. Residual current device (RCD)
2. Laundry electrical main switch
3. Power supply protection
4. Washer
5. Phase conductors
6. Protective conductor
7. Main switch inlet terminal
8. Neutral conductor

Residual Current Device (RCD)

In some countries an RCD is known as an “earth leakage trip,” “Ground Fault Circuit Interrupter” (GFCI), “Appliance Leakage Current Interrupter” (ALCI), or “earth (ground) leakage current breaker.”

Specifications:

- Tripping current: 100mA (if locally not available/allowed use a 30mA trip current, preferably selective type with small time delay set).
- Install a maximum of two (2) washers on each RCD (for 30mA, only one (1) washer)
- Type B. There are components inside the washer which use DC-voltages, making a “Type B” RCD necessary.

  NOTE: Type B performs better than Type A, and Type A is better than Type AC.

When locally allowed, an RCD must always be installed. In some electrical network earthing systems (IT, TN-C,…), an RCD might not be allowed (see also IEC 60364).

The washer control circuits are mostly supplied by a separating transformer. Therefore, the RCD may not detect faults in the control circuits (but the fuse(s) of the separating transformer will).

Supply Protection Device

A supply protection device keeps the washer and wiring from experiencing overloads and short circuits. As a supply protection device, you can use either glow-wire fuses or automatic circuit breakers. See “Technical Specifications” for the rating of the nominal current and other specifications of the supply protection device. This table specifies that protection must be the “slow” type, curve D for circuit breakers. Although not recommended, if you cannot use a “slow” type, select the protection device with one (1) step higher nominal current rating to avoid disconnecting during start-up.

Supply Cable

The supply cable is not delivered with the washer.

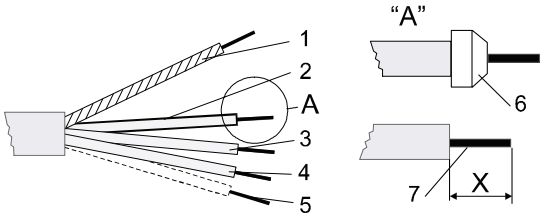
Specifications:

- Use conductors with copper cores.
- Stranded conductors (flexible wiring) are strongly recommended to avoid conductor breaking due to vibration.
- The cross section depends on the used supply protection device. See “Manufacturer’s Recommended Minimal Conductor Section” in “Electrical Requirements” for the minimal cross section.
- The cable should be as short as possible, directly across from the supply protection device to the washer without branching off.
- Do not use a plug or extension cords; the washer is intended to be permanently connected to the electrical network.

Connection:

- Insert the cable through the hole on the rear panel. Use a strain relief to secure the supply cable.
- Strip the conductor ends according to “Adaptation of Conductor Ends of Supply Cable” illustration on the right.
- The protective conductor must be longer to ensure it is the last one disconnected if the cable is pulled out unintentionally.
- With stranded conductors, it is recommended to use “wire-end tubes” with an insulated sleeve (6) for L1/U, (L2/V), (L3/W), (N) conductors. Make sure there cannot be unintentional contact, since the supply cable stays under voltage even when the main switch is off.
- Crimp a ring terminal (eyelet) to the protective conductor for good connection to the PE terminal.
- Connect the supply cable conductors to the terminals (main switch [1]) marked with L1/U, (L2/V), (L3/W), (N), and the terminal (copper screw) marked with PE. See “Main Power Inlet Connection” illustration below.
- Provide a sag in the cable, in front of the cable strain relief. This will stop condensed water from entering the washer. See “Main Power Inlet Connection” illustration below.

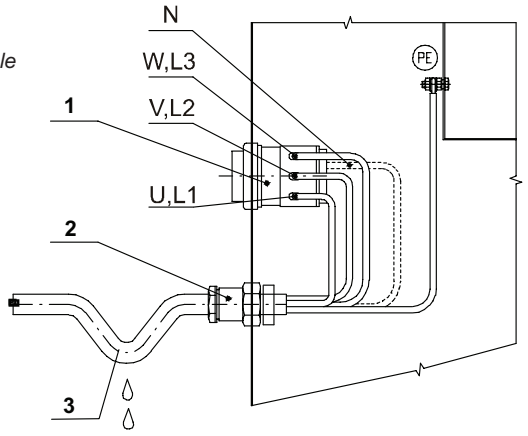
Adaptation of Conductor Ends of Supply Cable



1. Protective conductor
2. Phase conductor
3. Phase conductor
4. Phase conductor
5. Neutral conductor
6. Wire-end tube
7. The stripped length of conductors

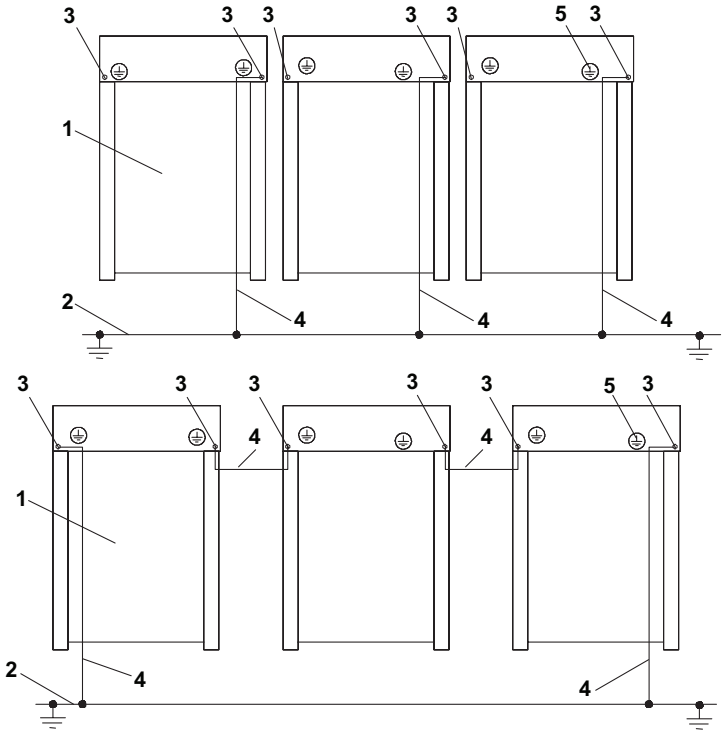
Main Power Inlet Connection

1. Main switch
2. Strain relief
3. Sag of inlet cable



Washer Earth Connection and Equipotential Bonding

Independent of the supply cable, the washer must be connected to the laundry earth system with a separate conductor. The protective conductor, which enables this connection, is not included with the washer. If there are other washers/appliances with exposed conductive parts which can be touched simultaneously, make equipotential bonding between all of these appliances. The external terminal for this purpose is located on the rear panel of the washer frame (see illustration below, position 3). The minimum protective conductor's cross section depends on the supply cable cross section and can be found in "Manufacturer's Recommended Minimal Conductor Section" in "Electrical Requirements." However, to keep a supply cable section of a minimum 4 mm^2 from malfunction , it is recommended to select a larger conductor section, for example 6 mm^2.



1. Washer (rear view)
2. Laundry earth connection
3. Washer external terminal
4. Protective conductor – washer connection
5. Earth ground label

Connecting Liquid Soap Supply Systems

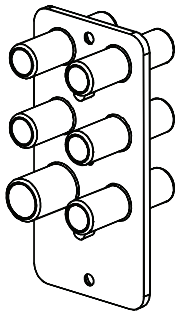
All models come with a liquid soap connection.

Always use liquid soap pumps that have a flow rate high enough to bring the desired quantity into the washer in less than 30 seconds.

IMPORTANT: Start pumping immediately after the water valves are open. The incoming water dilutes the liquid soap and brings it into the tub assembly.

IMPORTANT: Only qualified technicians should perform the installation. Secure the location of the wiring and hoses properly to keep them from being pinched, damaged, or rubbed. Before you start to use liquid soap, check with your liquid soap supplier to ensure the liquid soap will not cause damage and is inert to HD-PE and PVC material. The manufacturer is not responsible for damage caused by the liquid soap.

The washer has connections for external dosing of liquid soaps. A plastic hose connection is located on the rear of the washer to connect the liquid soap hoses. The connection has six (6) nipples that come closed at the factory. You must drill a 0.315"/8 mm hole in the small nipple for each liquid soap connection used (5 maximum). A ½"/12 mm nipple is also located on the plastic hose connection. Use this nipple ONLY for pumping in diluted soap. If you need to use the large nipple, you must drill a 0.45"/ 11.5 mm hole into it.



Models MFS80/ 100/125/180

NOTE: Gently remove the drill particles so that they cannot clog up the hoses and openings.

IMPORTANT:

- Make sure hose connections and clamps are tight.
- If one of the nipples is open, close and secure the opening with an appropriate cover.

Models MFS230/275

Electrical Connection

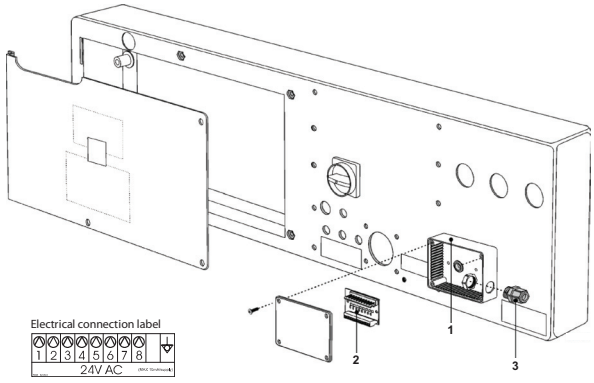
The power supply of the liquid soap pump system must be connected to an external electrical source. Only qualified technicians can make the electrical connection according to local codes. Instructions for the correct connection can be found on the wiring diagram located in a plastic bag inside the cabinet. Do not connect the liquid soap pump system in the washer.

Electronic Controller with MC5 and Graphic Display

For electrical connection of supply control signals, a plastic box is located on the rear of the washer (see illustration below, position 1). There is also a terminal box with LED signalization of activation of the respective pump (position 2).

A label for electrical connections is located on the back side of the terminal box cover (see illustration below). Detailed information on connecting signals can also be found on the electric schematic of the washer. Signals for the supply pump control are 24V AC. Maximum current for control circuits of pumps must be limited to 10mA. Insert the cable for connection of pump control signals through the plastic cable strain relief (position 3). After connection of conductors to the respective positions of the connector “P” (screw clamps), attach the cable by tightening the cable strain relief and replace the cover on the box. For details about liquid soap supply system programming, see the programming manual.

Rear Panel

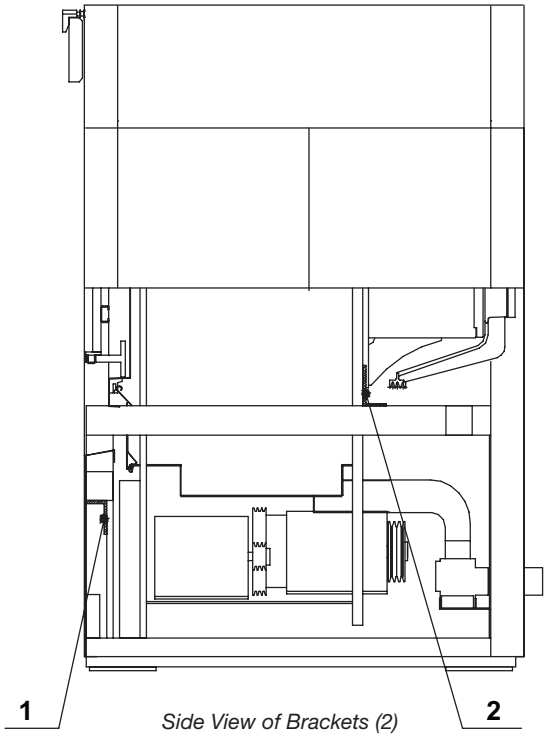


Remove Shipping Brackets

IMPORTANT: Shipping brackets must be removed before putting the washer into service. Failure to do so can cause damage to the washer.

Models MFS80, MFS100, MFS125

1. Remove the front lower panel and rear panel.
2. Remove the front shipping bracket (1) and the two rear shipping brackets (2). Retain brackets and bolts if needed to secure the washer for transport in the future.
3. Replace both panels.



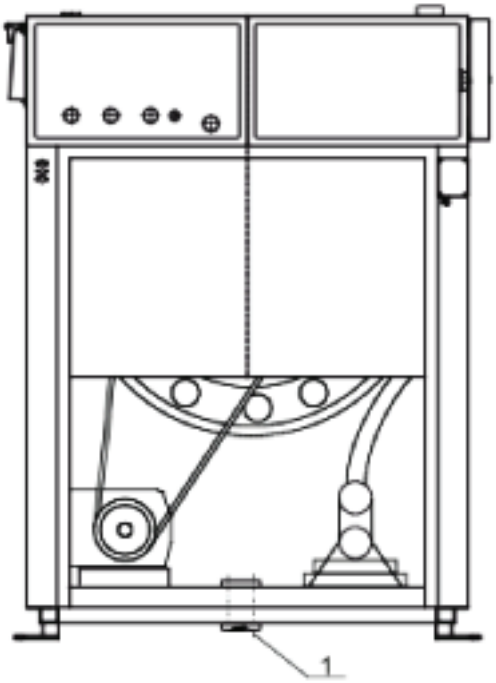
Side View of Brackets (2)

Shipping Brackets (Models MFS80, MFS100, and MFS125)

Remove Shipping Brackets (cont.)

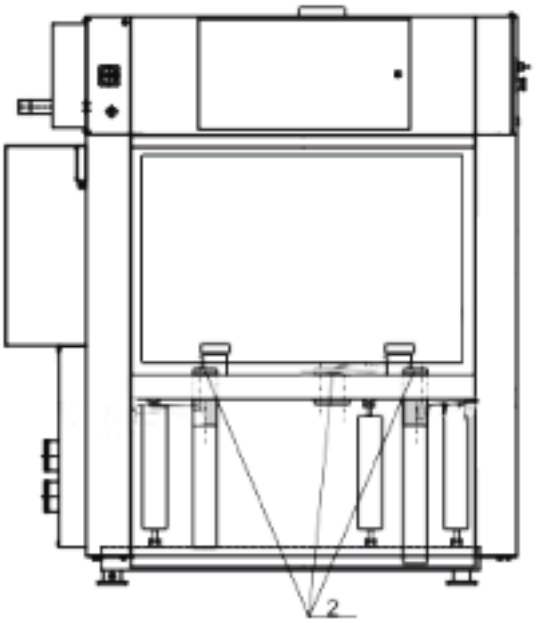
Models MFS180, MFS230, MFS275

1. Remove the rear lower panel and side panels.
2. Remove the rear shipping bracket (1), the three left-side shipping brackets (2), and the three right-side shipping brackets (3). Retain brackets and bolts if needed to secure the washer for transport in the future.
3. Replace panels.



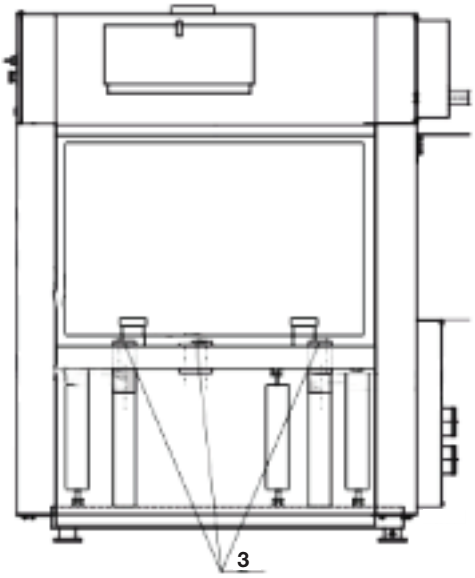
Rear View of Bracket (1)

Shipping Bracket (Models MFS180, MFS230, and MFS275)



Left-Side View of Brackets (3)

Shipping Brackets (Models MFS180, MFS230, and MFS275)



Right-Side View of Brackets (3)

Shipping Brackets (Models MFS180, MFS230, and MFS275)

Complete Installation

⚠WARNING

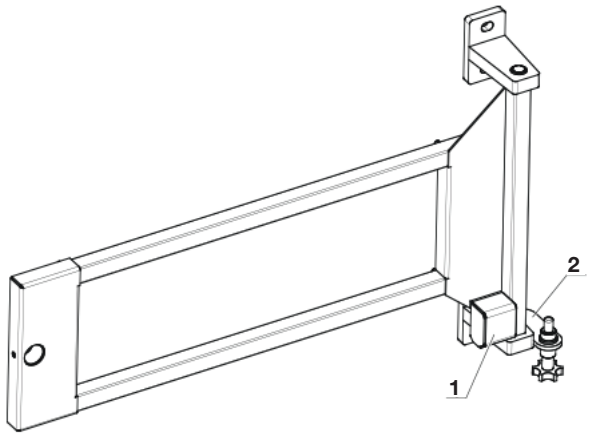
Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

1. Be sure that the shipping brackets are removed.
2. **Models with Tilting Feature:** Remove the braces securing the vibration components for transport. Then, in those same locations, mount the two stops that secure the tub assembly during tiliting. Replace all panels.
3. **Models with Tilting Feature:** Check the tilting direction.
   Press ▼ on remote control to tilt forward.
   Press ▲ on remote control to tilt back to beginning position.
4. **Models with Tilting Feature:** Make sure the Door Latch (2) can be inserted into the Latch Receptacle (1). The Door Latch will keep the door open during tilting. To release the door to close it, pull down on the Door Latch.



1. Latch Receptacle
2. Door Latch

5. Remove the film covering from the cabinet.
6. Make sure the waste sump is ready for water drainage.
7. Open door and make sure that the washer drum is empty.
8. Verify that washer is level and does not rock from side-to-side.
9. Check electrical connection and ground – PE or PEN.
10. Adjust vibration switch. See “Vibration Switch Adjustment” in Maintenance.
11. Check drain connection and clearance.
12. Turn power on at circuit breaker.
13. Turn the washer on. Begin a wash cycle. Watch the drum during the extraction cycle. The drum should rotate counter-clockwise as observed from the front of the washer for Models MFS80, MFS100, and MFS125. The drum should rotate clockwise as observed from the front of the washer for Models MFS180, MFS230, and MFS275.

IMPORTANT: If the drum rotates counterclockwise, turn off the power supply at the circuit breaker and reverse the polarity of the supply wires from the frequency inverter to the motor. This should only be performed by qualified personnel.

14. Perform vibration switch function test (see “Vibration Switch Adjustment and Function Test”).
15. Initialize for calibration of zero level (on the microprocessor model) according to the Programming Manual.
16. Begin wash cycle again. Activate the emergency stop switch. All electrical power to the washer should be deactivated.

Break-In Period

The following checks and adjustments should be performed during the break-in period as follows:

24 operation hours

- Check belt tightness. See “Belt Inspection and Adjustment” in Maintenance.

80 operation hours

- Check belt tightness. See “Belt Inspection and Adjustment” in Maintenance.
- Check mounting bolt tightness. Retighten if necessary (secured installation only).

Controls Troubleshooting

For programming and controls troubleshooting, refer to the Programming Guide.

WASHER MAINTENANCE

Maintenance Schedule

After Each Load

- Remove debris from the wash drum including paper clips, coins, and other hard items.
- When not in use, leave the washer door open to allow the washer to air out and prolong gasket life.

Daily Maintenance

- Clean water, detergent, and other stains off of the washer with a soft cloth dampened with a mild detergent solution.
- Dry with a soft cloth. Do not use abrasives.
- Clean detergent residue and other contamination off the door seal with a soft cloth dampened only with a mild detergent solution. Do not use solvents or acids. Do not lubricate seal with oil or grease.
- Remove residue from the laundry product hoppers with a plastic scraper. Wipe the hoppers with a soft cloth dampened with water.
- Check water and steam inlets for leaks. Correct as necessary.
- Check drain valve for leakage during a wash cycle (the valve is in open position when there is no electricity to it).

Maintenance Every 200 Working Hours or Every Month

1. Lubricate according to “Lubrication” section.
2. Make sure external liquid soap supply system is not leaking. Check all hose joints, screw joints and all connections in the system.

Maintenance Every 500 Working Hours or 3 Months

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

- Observe the washer from the back for one wash cycle. Be sure that water does not leak out of the drain during the wash part of the cycle and that it drains freely at the beginning of extraction. Clean the drain if either of these symptoms are observed.

1. Turn off power to washer at the circuit breaker or fuse box.
2. Check the tightness of the bolts securing the rear panel of the washer.
3. Inspect all hoses and connections inside the washer for leaks and correct as necessary.
4. Wipe off any stains with a soft cloth dampened with water or a mild detergent solution. Be sure that control components are not exposed to dust and moisture during cleaning.
5. Lubricate bearings and seals with a grease gun. See “Lubrication” section.
6. Tighten the contacts of heating element terminals on models with electric heating elements.
7. Put covers back on and check that all bolts are properly torqued.
8. Turn on power at circuit breaker or fuse box.

Maintenance Every 1000 Working Hours or 6 Months

- Turn off hot and cold water to the washer at the valves. Clean water filters.
- Clean and remove dirt and dust from:
  – the inverter cooling fin
  – the motor cooling fins
  – the inverter internal fan (if present)
  – the external fan (if present)
  – the external air relieves.
- Make sure the fan in the inverter cool fins (if present) is functioning.
- Make sure the external fan (if present) is functioning.
- Remove the rear cover. Inspect the V-belts and tension. See “Belt Inspection, Adjustment, and Replacement.”
- Check mounting bolt tightness. Retighten if necessary (fixed installation only).

Maintenance Every 2000 Working Hours or 12 Months

- Adjust and perform functional test on vibration switch (see “Vibration Switch Adjustment and Function Testing”).

Vibration Switch Adjustment and Function Test

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

The Vibration Switch is a critical component of the washer that avoids washer damage during extraction with an unbalanced load. Vibration Switch adjustment must be performed during installation and checked annually, and should only be done by a qualified technician.

Models MFS80, MFS100, and MFS125: The Vibration Switch is on an assembly bolted to the bottom of the mounting plate (4). The switch controlling element is inserted into the rubber bushing (3) located in the limiter (2). The limiter is bolted to the drum front face (1). The switch attached to the mounting plate is a part of the washer frame, which is attached to the limiter with the bushing. The bushing is the part of the assembly that vibrates.

Models MFS180, MFS230, and MFS275: The vibration switch has a flexible controlling element. The element is attached to a holder (6) by nuts (5). The entire assembly is bolted to the washer frame (3). The switch controlling element is inserted into the limiters (2), which are bolted to the drum front face (1). The limiters are the part of the assembly that vibrate.

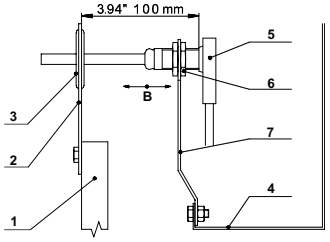
For all models, the bushing adjusts the sensitivity of the vibration switch by controlling the unbalance level of the wash load in the drum.

Vibration Switch Adjustment

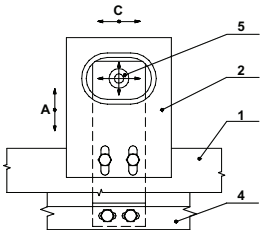
1. If the washer was just installed, run the washer through one complete extraction cycle without a load so the drum is at its balance point.
2. Turn off power to washer at the circuit breaker or fuse box.
3. Open the control panel cover.

Models MFS80, MFS100, and MFS125:

4. By moving the vibration switch on the holder to the left, you will increase the sensitivity; to the right, you decrease it. It is necessary to keep the distance of 4" (100 mm) between the limiter (2) and the vibration switch (5). See the Side View below.
5. Moving the holder (7) with the switch left or right will center the switch control element in the limiter's rubber bushing.



Side view

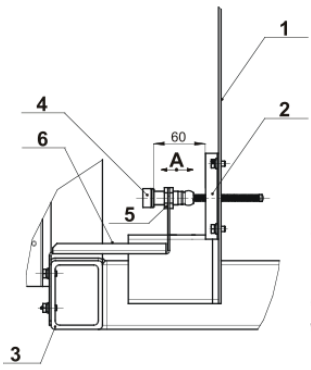


Front view

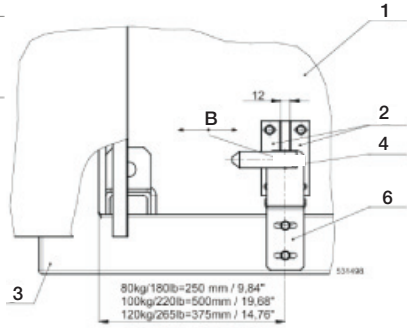
1. Front face of the drum
2. Limiter
3. Rubber bushing
4. Mounting plate
5. Vibration switch
6. Adjusting nut
7. Vibration switch holder

Models MFS180, MFS230, and MFS275:

4. By moving the vibration switch on the holder to the left, you will decrease the sensitivity; to the right, you increase it. It is necessary to keep the distance of 2.36" (60 mm) between the limiter (2) and the vibration switch (4). See the Side View below.
5. Moving the holder (6) with the switch left or right will center the switch control element between the limiters.



Side view



Front view

1. Front face of the drum
2. Limiters
3. Washer frame
4. Vibration switch
5. Adjusting nut
6. Vibration switch holder

Verifying the Vibration Switch Function

1. Open the control panel cover.
2. Start the extraction mode.
3. After reaching maximum RPM, switch over the vibration switch by moving the flexible control element manually. The extraction cycle should stop. If extraction does not stop, the vibration switch requires adjustment or is defective.

Belt Inspection, Adjustment, and Replacement

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

On a new washer or after a belt replacement, make an inspection of the belt tightness:

1. After the first 24 hours of operation;
2. After the first 80 hours of operation; and,
3. Every 6 months or 100 hours of operation, whichever comes first.

Belt Inspection and Adjustment

1. Turn off power to washer at the circuit breaker or fuse box.
2. The belts are accessible after the rear or side cover has been removed. Check the belts to make sure they are neither too tight or too loose. Change the belts if they are worn out or damaged. Always change a complete set of the belts for one transmission with the same type of belts being removed.
3. Be sure that the belt pulleys are aligned by laying a straight edge along the pulley faces. If all points are touching the straight edge, the pulleys are aligned.
4. Checking the belt tension requires a straight edge and a belt tension gauge. Place the straight edge from the drum pulley to the motor pulley. Belt tension is correct for Model MFS80 when a 12.1 lb (5.5 kg) force applied to the midpoint of the belt between the two pulleys deflects the belt 4/5" (20 mm). Belt tension is correct for Models MFS100 and MFS125 when a 15.4 lb (7 kg) force applied to the midpoint of the belt between the two pulleys deflects the belt 4/5" (20 mm). Belt tension is correct for Model MFS180 when a 2.6 lb (1.2 kg) force applied to the midpoint of the belt between the two pulleys deflects the belt 1/2" (12.3 mm). Belt tension is correct for Models MFS230 and MFS275 when a 4.9 lb (2.2 kg) force applied to the midpoint of the belt between the two pulleys deflects the belt 0.35" (9 mm). To adjust the belt, first loosen the locking nut and loosen or tighten the belt as necessary. Retighten the locking nut when adjusted and recheck.
5. Replace rear panel of washer. Turn on power at circuit breaker or fuse box.

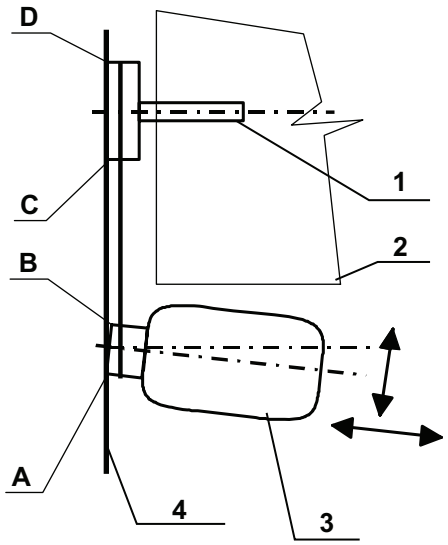
Belt Replacement

IMPORTANT: To avoid damage, do not use a pry bar to force the belts over the pulley grooves.

1. Loosen the pulley bolts on the rear wall of the drum.
2. Loosen the adjusting screw.
3. When replacing belts, replace them with a complete set. Make sure the new belts are the same type as the old ones.
4. Replace the pulleys if they are damaged.
5. After replacing the belts, check pulley alignment, belt tightness, bolts, and nuts.
6. Keep the belts and pulleys clean and free of oil, lubricants, water, etc.

Pulley Alignment:

For reliable operation and long belt life, the pulley must be properly aligned. Inspect the alignment by placing a ruler on the pulley faces. If all points (A, B, C, and D) are touching the ruler, the pulley is aligned.



1. Main housing with the pulley
2. Drum
3. Drive motor
4. Ruler

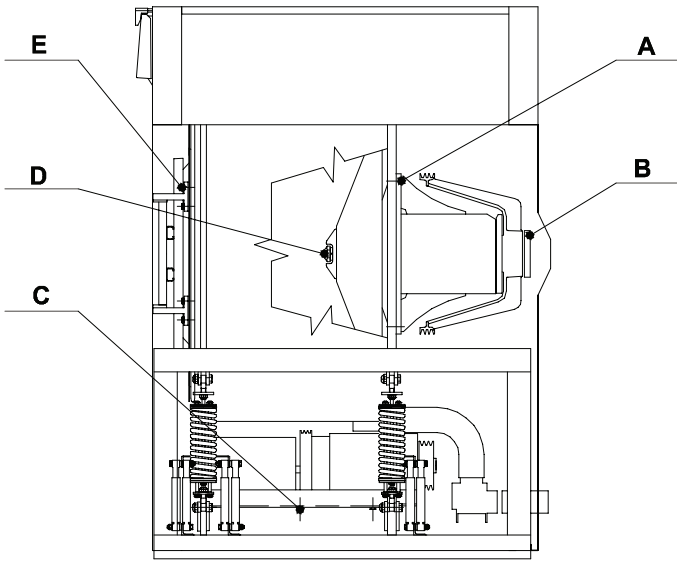
Tightening Moments

IMPORTANT:

- Once every three months or every 500 working hours (whichever comes first) inspect the tightness of the bolts.
- Replace a damaged bolt with a bolt of the same strength value marked on its head.

Tighten the loosened bolts using the torque value in the following table:

Tightening Moments Values of Bolts and Nuts				
Bolt (nut)	**Dimension**	**Number of Pcs.**	**Tightening Moments (Nm)**	**Tightening Moments (lbf.ft)**
A	M20 x 65	24 (12)	600.00	443.00
B	M12 x 30	8	70.00	52.00
	33 kg TYPE: nut KM13	1	450.00	332.00
C	M12 x 35	6	70.00	52.00
D	M30 x 80	1	800.00	590.00
E	M12 x 38	4	25.00	18.50



Bolts:

A. Bolts of hub flange
B. Bolts attaching the pulley to the nut of fixing housing
C. Bolts attaching the motors plate to the external drum
D. Bolts attaching the inner drum to the shaft
E. Bolts attaching the door brackets

Lubrication

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

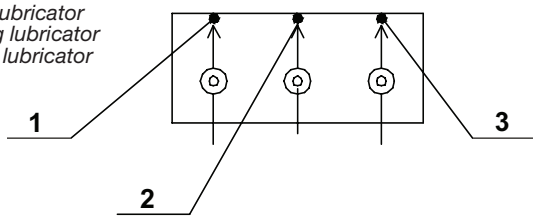
Grease bearings and seals with a grease gun slowly, not faster than 5 strokes per minute. This avoids seal deformation and leakage. Do not operate the grease gun faster, even if the grease contains air gaps. Too much lubrication can cause the same damage as too little.

Always make sure the grease gun is in perfect condition. Also, if you change lubricants, make sure the new one is compatible with the old one; failure to do so can lead to bearing failure. For example, lithium lubricants are compatible with calcareous lubricants but not with sodium ones. **NOTE:** Do not mix petroleum lubricants with silicone lubricants.

- **Lubricant:** Use a multipurpose lithium lubricant containing high-pressure additives with NLGI 2 consistency, such as SKF-LGEP 2 or ESSO-BEACON EP 2.
- **Lubricators:** Main bearings and seals are located on the rear cabinet. Press the lubricant in slowly and let the drum rotate with the same speed as during washing.
- **Quantity of Lubricant:** 2 cm³ (2 strokes) once a month or every 200 working hours, whichever comes first.

Lubrication Points

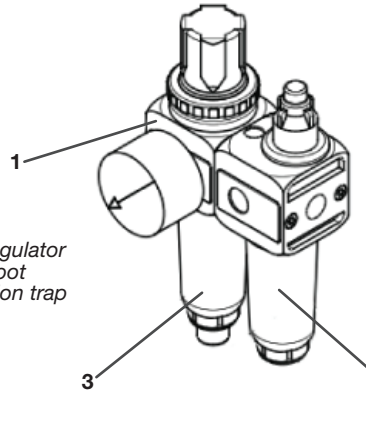
1. Rubber seal lubricator
2. Front-bearing lubricator
3. Rear-bearing lubricator



Once every 6 months or when needed, grease spring suspension eyes (see illustration in “Spring Unit”), guide rods (3), the door handle sleeve (see the illustration in “Thrust of Door Seal” [2]), and the sleeves in the door brackets (2). The motor bearings are maintenance-free (do not lubricate).

Pneumatic Lubricator (Models MFS180/230/275 only)

Fill the lubricaor pot with approximately 23 cm³ of oil. It is recommended to use non-detergent oil without aggressive additives and with viscosity of VG32 (ISO 3448), for example, oil for pneumatic devices or hydraulic oil.



1. Pressure regulator
2. Lubricator pot
3. Condensation trap

Water and Steam Filters

⚠WARNING

Burn Hazard

Before cleaning filters, turn off hot water and steam inlets.

Make sure inlets are cool.

Failure to follow these instructions can result in burns.

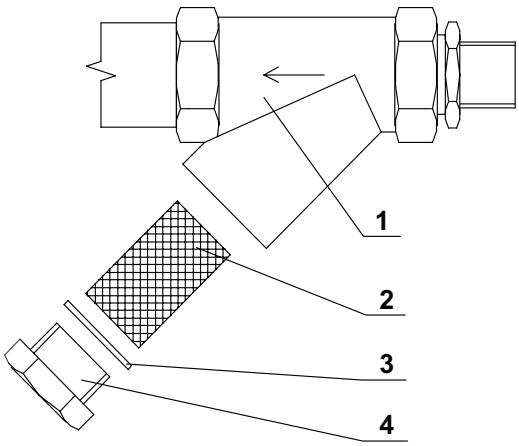
The washer is equipped with filters on water and steam inlets (models with steam heating) (Models MFS180/230/275 only have a filter for steam). Filters should be cleaned occasionally to avoid longer water filling times. Cleaning frequency depends on the quantity of foreign particles in the water line.

Cleaning the Filter:

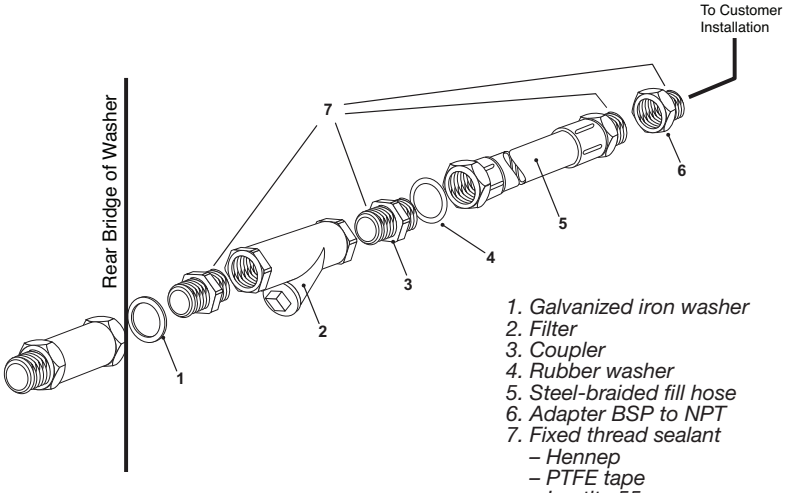
1. Turn off the water (steam) inlet.
2. Unscrew the filter plug and remove the filter sieve (2).
3. Clean the sieve with running water or with compressed air.
4. Put the sieve (2) and gasket (3) back on the filter body (1) and tighten the plug (4).

Filter

1. Filter body
2. Filter sieve
3. Gasket
4. Plug



Water Supply Connection



1. Galvanized iron washer
2. Filter
3. Coupler
4. Rubber washer
5. Steel-braided fill hose
6. Adapter BSP to NPT
7. Fixed thread sealant
– Hennep
– PTFE tape
– Loctite 55

Thrust of Door Seal

If there is a water leakage around the door, the door position may have shifted and is out of position or the door seal thrust may need adjustment. In some cases the door seal needs to be replaced.

Method 1: Adjusting on the Side of the Door Handle

1. Unscrew the bolt (1) securing the door handle sleeve (2).
2. Unscrew the handle sleeve (2) from the door carrier beam (3) by a whole turn so that the groove in the sleeve thread (2) appears below the handle bolt (1).
3. To make the sleeve (2) turn easier, insert a cylindrical object (such as a bolt) into the semicircle cuts (4) between the sleeve (2) and the handle pin (5). When the handle is turned, the sleeve (2) will also move.
4. After the door thrust has been adjusted, tighten up the handle bolt (1) to the groove in the sleeve (2) thread.

Method 2: Adjusting on the Side of the Door Hinge

⚠WARNING

Excessive Weight Hazard

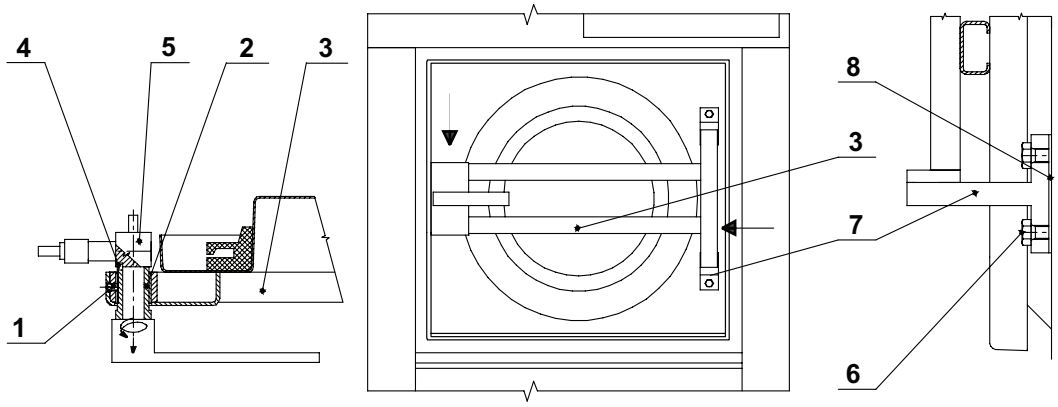
Use two or more people to remove or adjust door.

Failure to do so can result in serious injury.

If Method 1 fails to adjust the door seal thrust, follow these steps:

1. Loosen the two bolts (6) securing the top door hinge (7).
2. Remove the shim washer (8).
3. Tighten the two bolts (6) securing the top hinge.
4. Tighten the two bolts (6) securing the bottom hinge.
5. Make sure the door opens and closes smoothly.

If Method 2 fails to adjust the door seal thrust, replace the door seal.



1. Handle bolt
2. Handle sleeve
3. Door carrier beam
4. Semicircle cuts
5. Handle pin
6. Hinge bolt
7. Hinge
8. Shim washer

Spring Unit

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

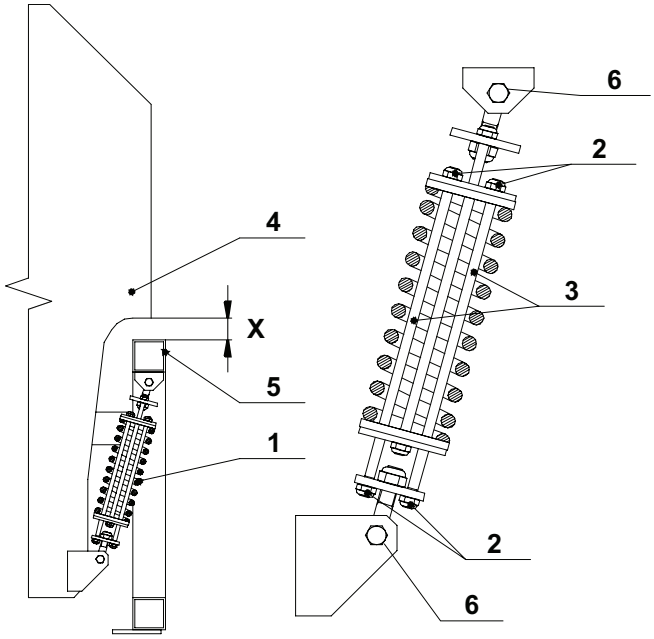
Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Models MFS80, MFS100, and MFS125:

Adjust the spring units if a suspension part is not horizontal (without wash load and water) or after the spring unit has been replaced.

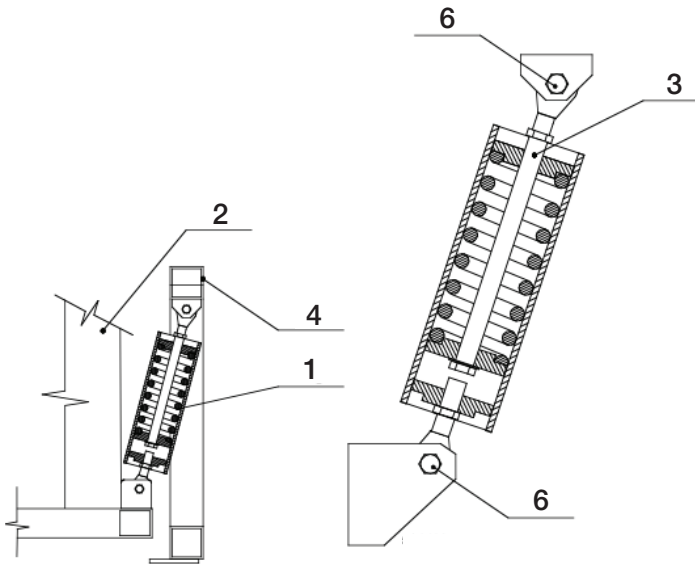
To adjust the spring unit, turn the nuts (2) the same number of turns simultaneously on the opposite guiding rods (3). The adjustment is correct when the gap in all four corners of the suspended part is the same (X = 2.16"/55 mm) between the plate edge (4) of the suspended part and the top surface of the frame (5).



1. Spring unit
2. Adjusting nuts
3. Guiding rods
4. Suspended part
5. Washer frame
6. Spring suspension eyes

Models MFS180, MFS230, and MFS275:

These models are to be adjusted by the manufacturer.



1. Spring unit
2. Suspended part
3. Guiding rods
4. Washer frame
6. Spring suspension eyes

Fuse Capacities

Check Wire Diagram for Fuse Number	MFS55 Only (208-500V)	Other Models (<250 Volt)	Other Models (250-500 Volt)
Fuse 1	1A/500V	2.5 Amp/250V	1A/500V
Fuse 2	1A/500V	2.5 Amp/250V	1A/500V
Fuse 3	1.6A/250V	1.6A/250V	1.6A/250V
Fuse 4	1A/250V	1A/250V	1A/250V

Earth Leakage Trips

IMPORTANT: A qualified technician must perform an earth leakage trip function test at least once every 3 months.

If the washer is equipped with an earth leakage trip in the inlet circuit of the electric switchboard, it must be tested regularly. The earth leakage trip is very sensitive and helps avoid electric shock during washer operation.

To test:

Press the earth leakage trip test button while the trip is under tension. If the trip is functioning, it will shut off.

TROUBLESHOOTING

Door Will Not Unlock

Possible Cause

- A power outage

Solution

If a cycle has started:

- Microprocessor version: The door cannot be opened.

If a cycle has ended:

- Microprocessor version: Press the stop button and follow the instructions in the Programming Manual – Electronic Programmer.

In an emergency:

⚠WARNING

Electrical Shock Hazard

Disconnect power before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

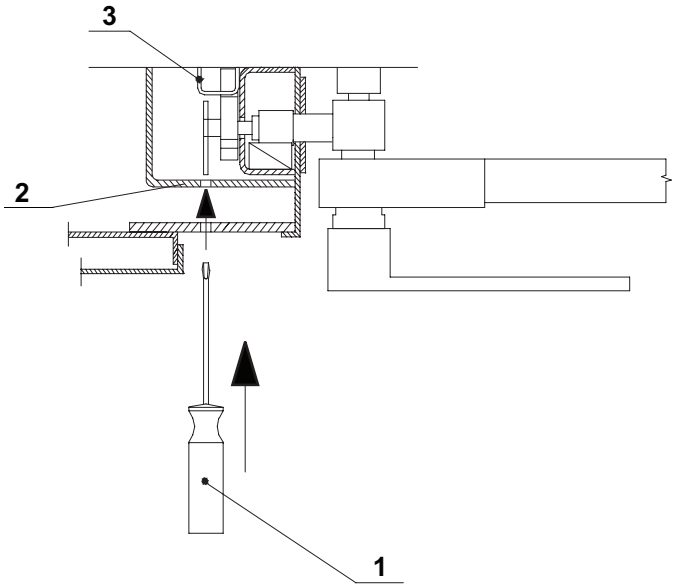
IMPORTANT:

- Before opening the door, turn off the washer.
- Do not open the door if the drum has not completely stopped.
- Do not open the door if “TOO HOT” is displayed.
- Do not open the door if any part of the washer feels too warm.
- Do not open the door if there is water in the drum.

In an emergency (cont.):

Models MFS80, MFS100, and MFS125:

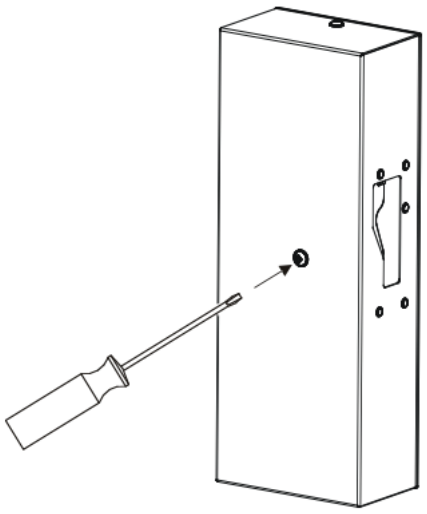
- Use a screwdriver (1) or piece of wire with a maximum diameter of 0.21" (5.5 mm). Insert the screwdriver or wire through the finger hole in the lock cover (2) and push with normal pressure. The latch mechanism (3) will lift up and release the lock. The lock will stay unlocked even after the screwdriver or wire is removed. You can open the door if the drum is not rotating or if the washer does not contain hot water.



Top view

Models MFS180, MFS230, and MFS275:

- Unscrew the bolt in the lock cover. Insert a screwdriver into the hole in the lock cover and push gently. The latch mechanism will lift up and release the lock. The lock will stay unlocked even after the screwdriver is removed. You can open the door if the drum is not rotating or if the washer does not contain hot water.



Lock Cover

REMOVING THE WASHER FROM SERVICE

Disconnecting the Washer

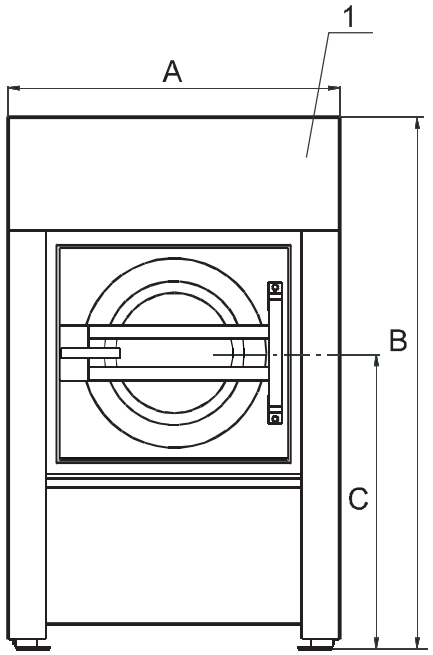
1. Disconnect the washer from electricity.
2. Turn off power at the main switch on the rear of the washer.
3. Shut off the water and steam to the washer.
4. Disconnect all water and steam inlets.
5. Insulate the external electric power inlet conductors.
6. Place an “Out of Service” sign on the washer.
7. Unscrew any nuts (bolts) that may be securing the washer to the floor.
8. During transportation, follow the instructions under “Equipment for Handling, Transport, and Storage” in the “Installation Requirements” section.
9. If the washer will not be used again, gently remove the door with the hinge.

Disposing of the Washer

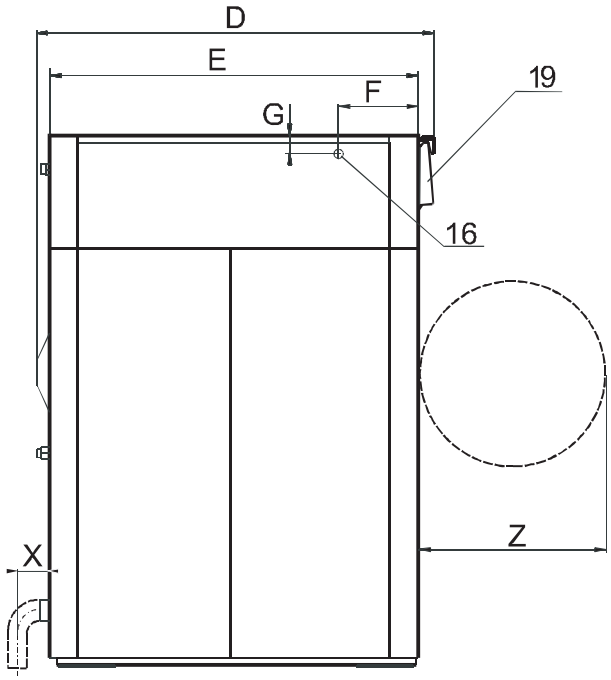
Scrap according to local codes.

DIMENSIONS AND TECHNICAL SPECIFICATIONS

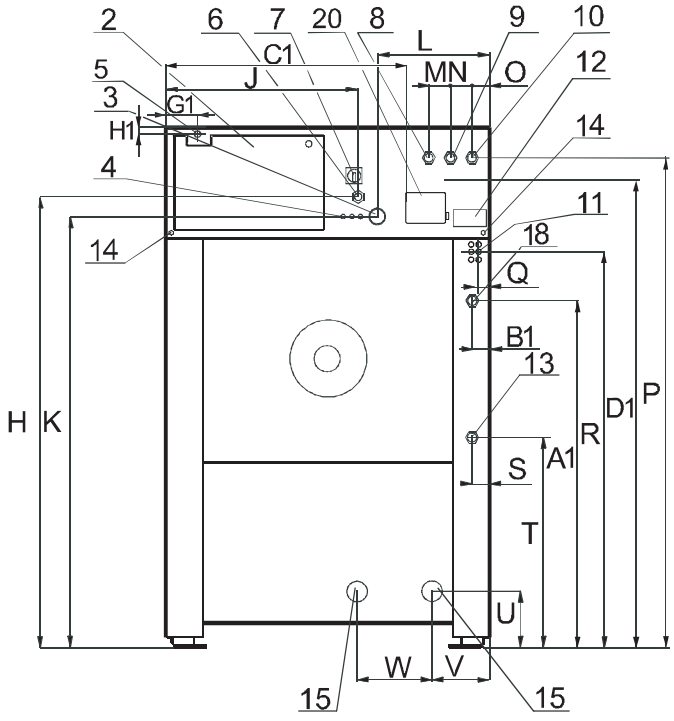
(Models MFS80, MFS100, and MFS125)



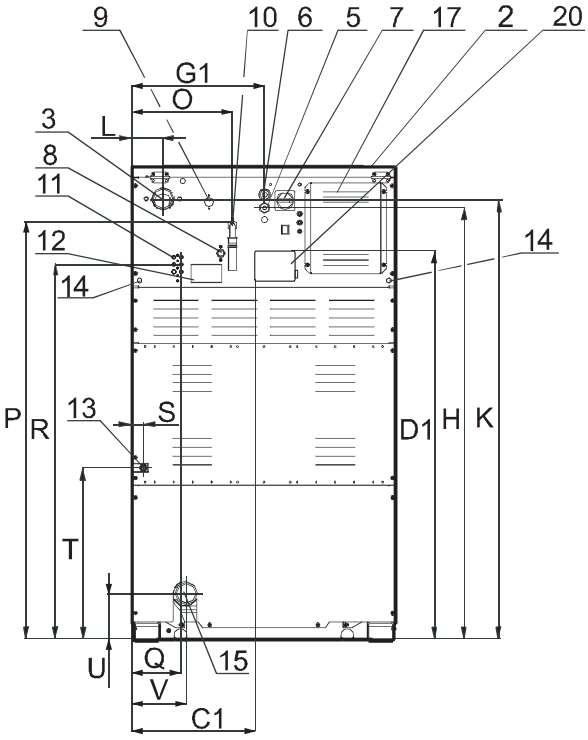
Front View



Side View



Top View



Back View

1. *Front panel with operating elements*
2. *Electric switchboard cover*
3. *Tub ventilation: 2.4"/60 mm*
4. *Lubrication*
5. *Turnbuckle soap supply cable*
6. *Main power supply bushing*
7. *Main switch*
8. *Hard cold water inlet*
9. *Hot water inlet*
10. *Soft cold water inlet*
11. *Hose connection external soap supply*
12. *Data plate*
13. *Steam inlet*
14. *External terminal*
15. *Drain outlet*
16. *Soap hopper air relieve*
17. *Frequency inverter cover*
18. *Compressed air supply*
19. *Soap hoppers*
20. *Plastic box for electrical connection to liquid soap pumps*

Dimensions and Connections

Washer Capacity	80 lbs (33 kg)	100 lbs (40 kg)	125 lbs (55 kg)
A	47.04" (1195 mm)	47.04" (1195 mm)	47.04" (1195 mm)
A1*	53.58" (1361 mm)	53.58" (1361 mm)	53.58" (1361 mm)
B	75.00" (1905 mm)	75.00" (1905 mm)	75.00" (1905 mm)
B1*	4.56" (116 mm)	4.56" (116 mm)	4.56" (116 mm)
C	41.54" (1055 mm)	41.54" (1055 mm)	41.54" (1055 mm)
C1	38.58" (980 mm)	38.58" (980 mm)	38.58" (980 mm)
D	52.40" (1330 mm)	56.30" (1430 mm)	63.39" (1610 mm)
D1	62.99" (1600 mm)	62.99" (1600 mm)	62.99" (1600 mm)
E	48.11" (1222 mm)	52.05" (1322 mm)	59.13" (1502 mm)
F	11.80" (300 mm)	11.80" (300 mm)	11.80" (300 mm)
G	1.97" (50 mm)	1.97" (50 mm)	1.97" (50 mm)
G1	4.33" (110 mm)	4.33" (110 mm)	4.33" (110 mm)
H	63.66" (1617 mm)	63.66" (1617 mm)	63.66" (1617 mm)
H1	0.98" (25 mm)	0.98" (25 mm)	0.98" (25 mm)
J	28.74" (730 mm)	28.74" (730 mm)	28.74" (730 mm)
K	61.69" (1567 mm)	61.69" (1567 mm)	61.69" (1567 mm)
L	16.61" (422 mm)	16.61" (422 mm)	16.61" (422 mm)
M	3.15" (80 mm)	3.15" (80 mm)	3.15" (80 mm)
N	3.15" (80 mm)	3.15" (80 mm)	3.15" (80 mm)
O	2.75" (70 mm)	2.75" (70 mm)	2.75" (70 mm)
P	70.16" (1782 mm)	70.16" (1782 mm)	70.16" (1782 mm)
P*	65.82" (1672 mm)	65.82" (1672 mm)	65.82" (1672 mm)
Q	2.36" (60 mm)	2.36" (60 mm)	2.36" (60 mm)
R	50.59" (1285 mm)	50.59" (1285 mm)	50.59" (1285 mm)
S	2.56" (65 mm)	2.56" (65 mm)	2.56" (65 mm)
T	30.24" (768 mm)	30.24" (768 mm)	30.24" (768 mm)
U	8.07" (205 mm)	8.07" (205 mm)	8.07" (205 mm)
V	8.39" (213 mm)	8.39" (213 mm)	8.39" (213 mm)
W	16.54" (420 mm)	10.83" (275 mm)	10.83" (275 mm)
X	6.89" (175 mm)	6.89" (175 mm)	6.89" (175 mm)
Z	27.56" (700 mm)	27.56" (700 mm)	27.56" (700 mm)

*Models featuring water valves with air-operated control only

Torque Specifications

Recommended Torque Values for Steel Bolts	
Bolt Size	**Torque**
M16 x 160 mm	155 ft. lbs. (210 Nm)

Technical Specifications (Models MFS80, MFS100, and MFS125)

	MFS80	MFS100	MFS125
Washer Dimensions*			
Width	47.04" (1195 mm)	47.04" (1195 mm)	47.04" (1195 mm)
Depth	52.40" (1330 mm)	56.30" (1430 mm)	63.40" (1610 mm)
Height	75.00" (1905 mm)	75.00" (1905 mm)	75.00" (1905 mm)
Packing Dimensions			
Width	56.30" (1430 mm)	56.30" (1430 mm)	56.30" (1430 mm)
Depth	58.10" (1475 mm)	61.80" (1570 mm)	68.90" (1750 mm)
Height	82.90" (2105 mm)	82.90" (2105 mm)	82.90" (2105 mm)
Transportation Volume	156 ft^3 (4.4 m^3)	166 ft^3 (4.70 m^3)	187 ft^3 (5.30 m^3)
Inner Drum Dimensions			
Diameter	36.00" (914 mm)	36.00" (914 mm)	36.00" (914 mm)
Depth	20.00" (510 mm)	24.00" (610 mm)	31.10" (790 mm)
Drum Volume	88 gal. (335 dm^3)	106 gal. (400 dm^3)	137 gal. (518 dm^3)
Door Opening	21.30" (540 mm)	21.30" (540 mm)	21.30" (540 mm)
Weight			
Net	2712 lb (1230 kg)	3439 lb (1560 kg)	3594 lb (1630 kg)
Gross	3020 lb (1370 kg)	3748 lb (1700 kg)	3902 lb (1770 kg)
Electrical Requirements			
	3x380–415V 50/60 Hz 3x440–480V 50/60 Hz 3x208–240V 50/60 Hz		
Power Supply – Deviations	–6% to +10% of the voltage supply $\pm$1 Hz		
Input of Washer			
Electric Heating 24 kW	28.1 kW	–	–
Electric Heating 36 kW	–	43.6 kW	–
Electric Heating 54 kW (380–480V)	–	–	61.6 kW
Steam or Without Heating	4.1 kW	7.6 kW	7.6 kW
Nominal Motor Output	4 kW	7.5 kW	7.5 kW
Residual Current Device (RCD)	100 mA, Class B		
Supply Protecion Device Use “slow” type protection devices (circuit breakers: **Curve D**)			
Steam or Without Electric Heating			
200–240V 3 AC	30A	40A	40A
380–480V 3 AC	16A (15A)	20A	20A
Electric Heating 24 kW (200–240V)	80A	–	–
Electric Heating 24 kW (380–415V)	50A	–	–
Electric Heating 24 kW (440–480V)	32A	–	–
Electric Heating 36 kW (200–240V)	–	120A	–
Electric Heating 36 kW (380–480V)	–	80A	–
Electric Heating 54 kW (220–240V)	–	–	160A
Electric Heating 54 kW (380–480V)	–	–	100A

* Maximum dimensions, including protruding parts

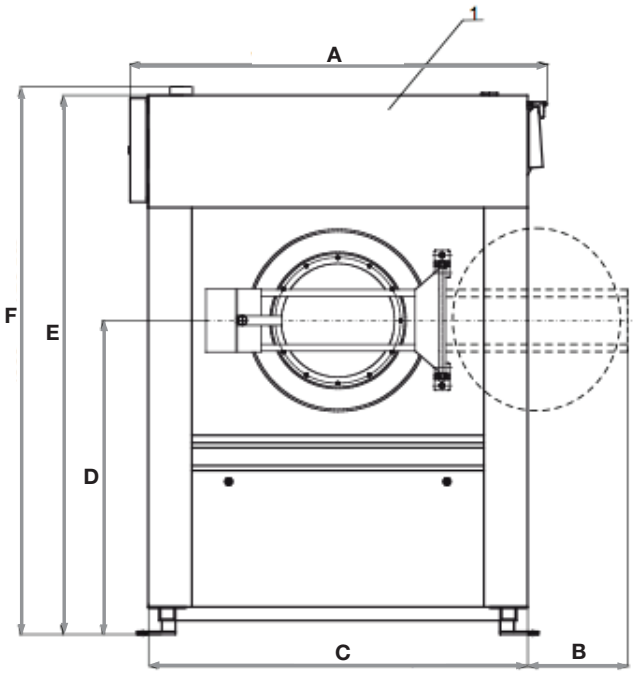
Technical Specifications Cont. (Models MFS80, MFS100, and MFS125)

	MFS80	MFS100	MFS125
Washing Functions			
Washing	38 RPM	38 RPM	38 RPM
High Extracting	830 RPM	830 RPM	830 RPM
G-Factor	Max. 350	Max. 350	Max. 350
Water Connection			
Water Inlet Connection	BSP 1"		
Water Pressure Range	14.5–116 PSI/0.1–0.8 MPa/1–8 bar		
Recommended Water Pressure	43–73 PSI/0.3–0.5 MPa/3–5 bar		
Maximum Water Temperature	194°F/90°C		
Drain Connection			
Drain Valve Diameter	2 x 3"/76 mm		
Flow Rate	80 gal/300 dm^2 min.		
Steam Connection			
Steam Connection	G 3/4"		
Steam Pressure	44–116 PSI/0.3–0.8 MPa/3–8 bar		
Press Air Connection**			
Connection	G 1/4"		
Pressure	43–73 PSI/0.3–0.5 MPa/3–5 bar		
Dispensing			
Powder Dispenser	5		
Liquid Soap Supply	8		
Hydraulic Provision	6		
Consumption (1)	Light soiled 140°F/60°C wash		
Without Electric Heating	1.1 kWh	1.7 kWh	2.1 kWh
With Electric Heating	5.3 kWh	8 kWh	12 kWh
Steam	0.101 $lbs.s^{-1}$/ 0.046 $kg.s^{-1}$	0.123 $lbs.s^{-1}$/ 0.055 $kg.s^{-1}$	0.168 $lbs.s^{-1}$/ 0.076 $kg.s^{-1}$
Working Conditions			
Ambient Temperature	41°F (+5°C) to 95°F (+35°C)		
Relative Humidity	30% to 90% without condensation		
Height Above Sea Level	up to 3280 ft/1000 m		
Storage Temperature	34°F (1°C) to 131°F (+55°C)		
Anchoring			
Max. Static Load on Floor	14416 N	18162 N	19574 N
Max. Dynamic Load on Floor	12709 ± 2747 N	16083 ± 2943 N	17064 ± 3139 N
Frequency of Dynamic Load	14 Hz	14 Hz	14Hz
Noise			
Equivalent Noise Level L_{AEQ} (dB[A])	80.8 dB(A)	77 dB(A)	77 dB(A)

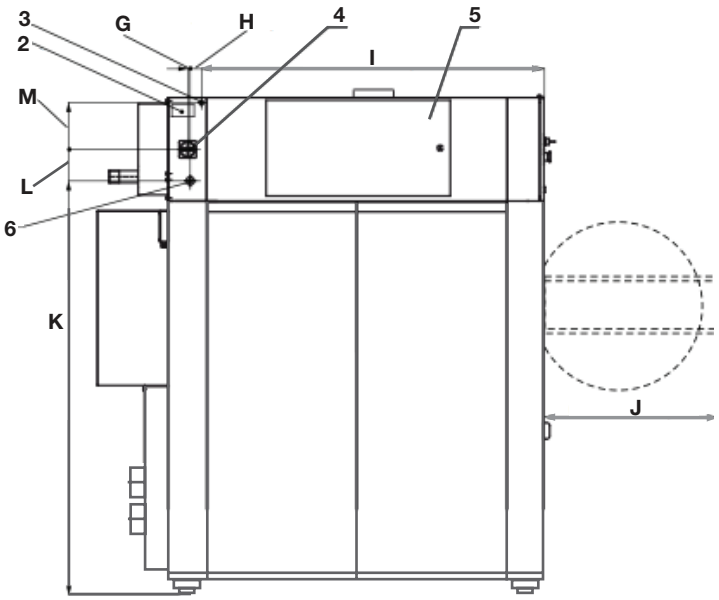
** Valid for washers which have water valves with air-operated control.

(1) Depends on cold and hot water supply temperature and wash program setup.

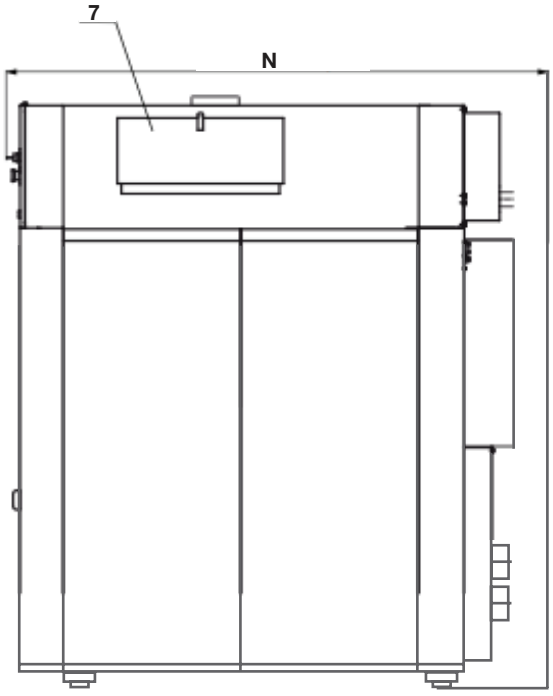
DIMENSIONS AND TECHNICAL SPECIFICATIONS
(Model MFS180)



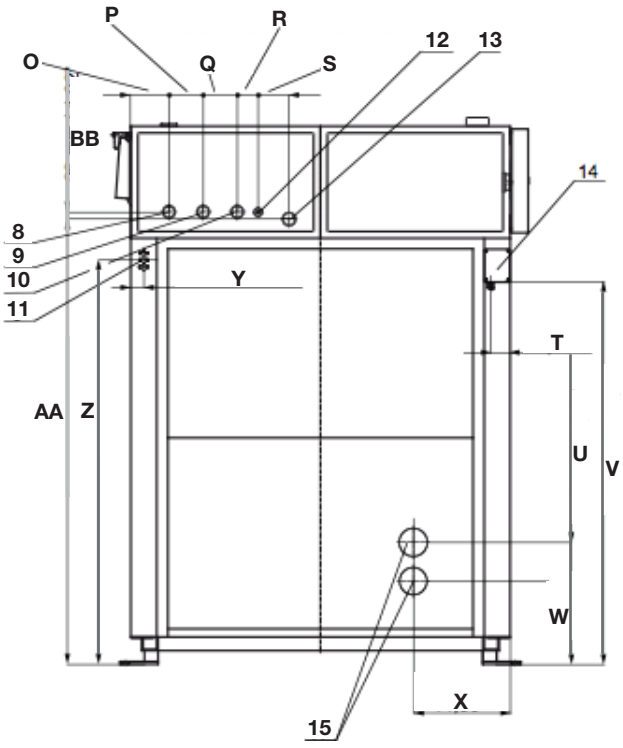
Front View



Side View



Top View



Back View

1. Operator panel
2. Data plate
3. Compressed air supply
4. Main switch
5. Electric switchboard cover
6. Entry main power cable
7. Soap dispenser
8. Hard cold water inlet
9. Soft cold water inlet
10. Hot water inlet
11. Hose (hoses) connection soap supply
12. Steam inlet
13. Tub ventilation
14. Electrical signals liquid soap
15. Drain outlet

Dimensions and Connections

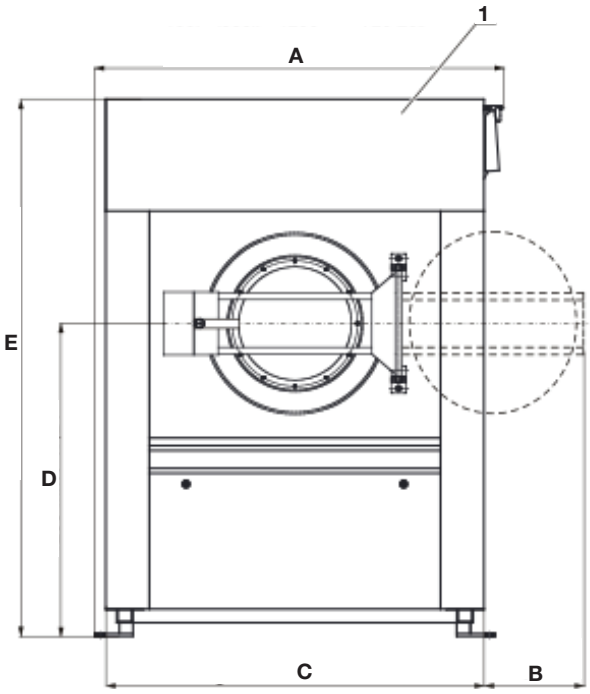
Washer Capacity	180 lbs (80 kg)
A	60.23" (1530 mm)
B	15.75" (400 mm)
C	54.72" (1390 mm)
D	45.27" (1150 mm)
E	77.55" (1970 mm)
F	78.58" (1996 mm)
G	0.39" (10 mm)
H	1.77" (45 mm)
I	53.42" (1357 mm)
J	26.77" (680 mm)
K	64.56" (1640 mm)
L	4.92" (125 mm)
M	7.28" (185 mm)
N	70.74" (1797 mm)
O	5.51" (140 mm)
P	4.92" (125 mm)
Q	4.92" (125 mm)
R	3.93" (100 mm)
S	3.54" (90 mm)
T	2.83" (72 mm)
U	5.59" (142 mm)
V	55.11" (1400 mm)
W	11.81" (300 mm)
X	14.96" (380 mm)
Y	1.88" (48 mm)
Z	58.26" (1480 mm)
AA	64.17" (1630 mm)
BB	1.02" (26 mm)

Torque Specifications

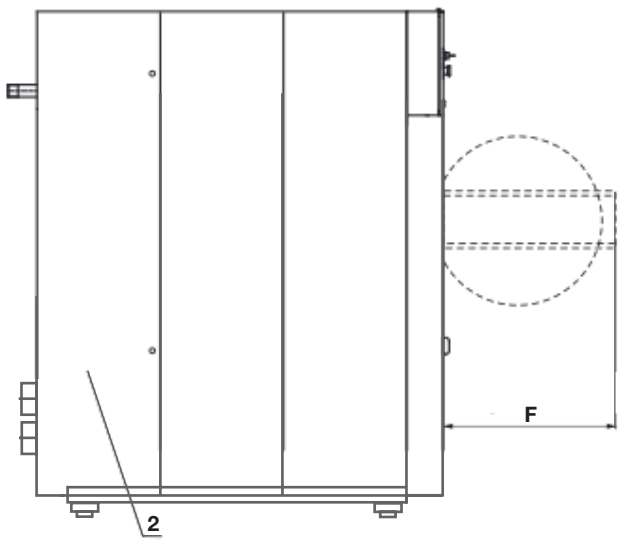
Recommended Torque Values for Steel Bolts	
Bolt Size	**Torque**
M10 x 160 mm	36 ft. lbs. (49 Nm)

DIMENSIONS AND TECHNICAL SPECIFICATIONS

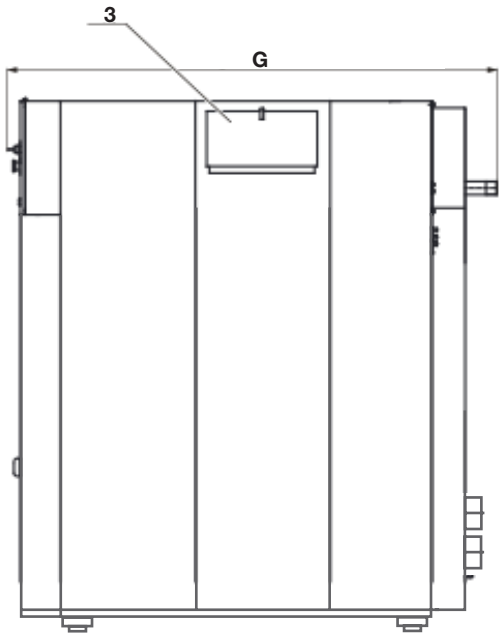
(Models MFS230 and MFS275)



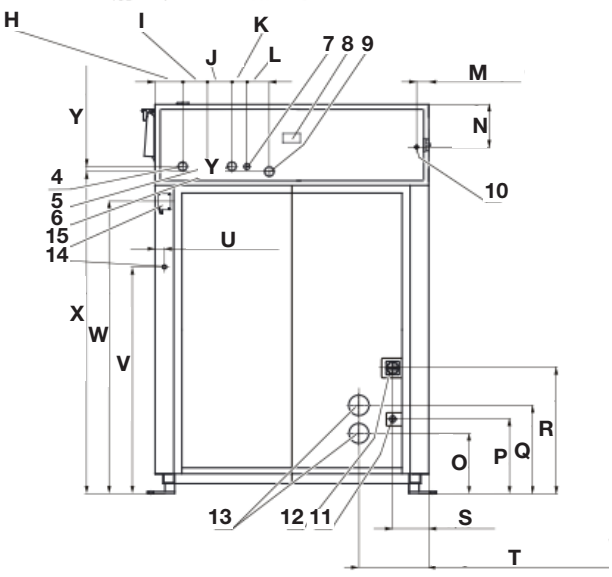
Front View



Side View



Top View



Back View

1. *Operator panel*
2. *Electric switchboard cover*
3. *Soap dispenser*
4. *Hard cold water inlet*
5. *Soft cold water inlet*
6. *Hot water inlet*
7. *Steam inlet*
8. *Data plate*
9. *Tub ventilation*
10. *Compressed air supply*
11. *Entry main power cable*
12. *Main switch*
13. *Drain outlet*
14. *Hose (hoses) connection soap supply*
15. *Electrical signals liquid soap*

Dimensions and Connections

Washer Capacity	230 lbs (104 kg)	275 lbs (125 kg)
A	70.78" (1798 mm)	72.91" (1852 mm)
B	15.75" (400 mm)	15.75" (400 mm)
C	66.45" (1688 mm)	68.89" (1750 mm)
D	47.24" (1200 mm)	47.24" (1200 mm)
E	76.61" (1946 mm)	81.77" (2077 mm)
F	25.59" (650 mm)	30.11" (765 mm)
G	79.13" (2010 mm)	79.72" (2025 mm)
H	9.25" (235 mm)	8.54" (217 mm)
I	4.92" (125 mm)	4.92" (125 mm)
J	4.92" (125 mm)	4.92" (125 mm)
K	4.64" (118 mm)	4.64" (118 mm)
L	5.27" (134 mm)	5.27" (134 mm)
M	3.14" (80 mm)	3.14" (80 mm)
N	6.69" (170 mm)	6.69" (170 mm)
O	9.6" (244 mm)	9.6" (244 mm)
P	14.6" (371 mm)	14.6" (371 mm)
Q	15.55" (395 mm)	15.55" (395 mm)
R	27.95" (710 mm)	27.95" (710 mm)
S	7.48" (190 mm)	7.48" (190 mm)
T	20.47" (520 mm)	22.04" (560 mm)
U	3.22" (82 mm)	3.22" (82 mm)
V	56.29" (1430 mm)	56.29" (1430 mm)
W	60.23" (1530 mm)	60.23" (1530 mm)
X	73.5" (1867 mm)	73.5" (1867 mm)
Y	1.02" (26 mm)	1.02" (26 mm)

Torque Specifications

Recommended Torque Values for Steel Bolts	
Bolt Size	**Torque**
M10 x 160 mm	36 ft. lbs. (49 Nm)

Technical Specifications (Models MFS180, MFS230, and MFS275)

	MFS180	MFS230	MFS275
Washer Dimensions*			
Width	60.23" (1530 mm)	70.86" (1800 mm)	73.03" (1855 mm)
Depth	70.86" (1800 mm)	79.13" (2010 mm)	79.72" (2025 mm)
Height	78.73" (2000 mm)	76.77" (1950 mm)	81.88" (2080 mm)
Packing Dimensions			
Width	66.53" (1690 mm)	73.42" (1865 mm)	78.73" (2000 mm)
Depth	76.77" (1950 mm)	83.66" (2125 mm)	85.43" (2170 mm)
Height	86.61" (2200 mm)	92.33" (2345 mm)	92.12" (2340 mm)
Transportation Volume	256 ft^3 (7.25 m^3)	328 ft^3 (9.29 m^3)	359 ft^3 (10.16 m^3)
Inner Drum Dimensions			
Diameter	43.70" (1110 mm)	47.24" (1200 mm)	39.48" (1300 mm)
Depth	33.00" (838 mm)	33.85" (860 mm)	34.25" (870 mm)
Drum Volume	213 gal. (807 dm^3)	265 gal. (1003 dm^3)	312 gal. (1180 dm^3)
Door Opening	20.86" (530 mm)	20.86" (530 mm)	20.86" (530 mm)
Weight			
Net	5820 lb (2640 kg)	7055 lb (3200 kg)	7232 lb (3280 kg)
Gross	6239 lb (2830 kg)	7496 lb (3400 kg)	7695 lb (3490 kg)
Electrical Requirements			
	3x208–240V 50/60 Hz 3x380–415V 50/60 Hz		
Power Supply – Deviations	–6% to +10% of the voltage supply $\pm$1 Hz		
Input of Washer			
Electric Heating 67.5 kW	75 kW	–	–
Steam or Without Heating	11.25 kW	15.25 kW	18.75 kW
Nominal Motor Output	11 kW	15 kW	18.5 kW
Residual Current Device (RCD)	100 mA, Class B		
Supply Protecion Device Use “slow” type protection devices (circuit breakers: **Curve D**)			
Steam or Without Electric Heating			
3 x 208–240V 50/60 Hz	63A	75A	100A
3 x 380–480V 50/60 Hz	32A	50A	63A
Electric Heating 67.5 kW (3 x 208–240V)	250A	–	–
Electric Heating 67.5 kW (380–480V)	125A	–	–

* Maximum dimensions, including protruding parts

Technical Specifications Cont. (Models MFS180, MFS230, and MFS275)

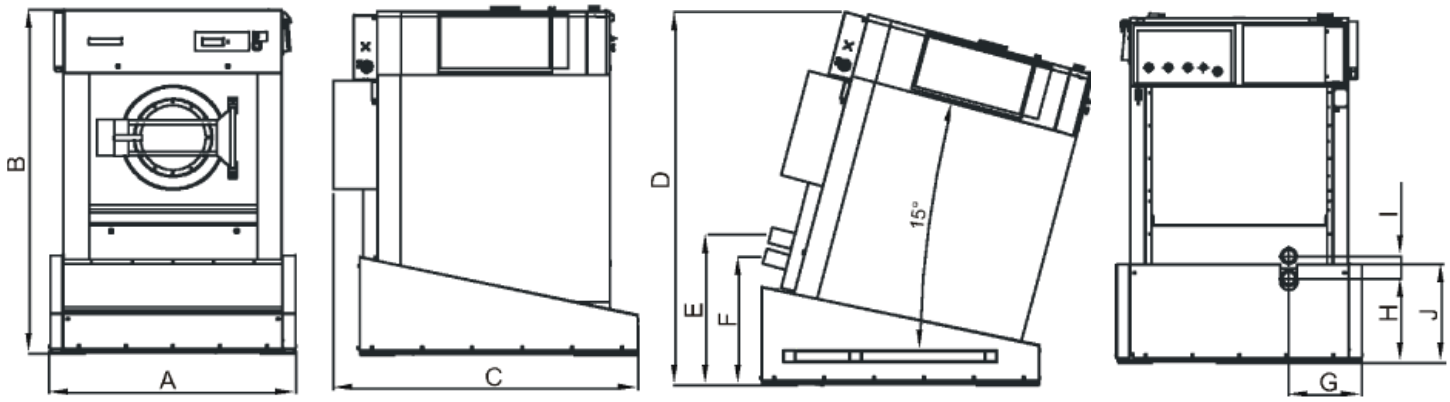
	MFS180	MFS230	MFS275
Washing Functions			
Washing	36 RPM	35 RPM	34 RPM
High Extracting	750 RPM	725 RPM	700 RPM
G-Factor	Max. 350	Max. 350	Max. 350
Water Connection			
Water Inlet Connection	BSP 1"		
Water Pressure Range	14.5–116 PSI/0.1–0.8 MPa/1–8 bar		
Recommended Water Pressure	43–73 PSI/0.3–0.5 MPa/3–5 bar		
Maximum Water Temperature	194°F/90°C		
Drain Connection			
Drain Valve Diameter	2 x 4"/103 mm		
Flow Rate	142 gal/540 dm^2 min.		
Steam Connection			
Steam Connection	G 1"		
Steam Pressure	44–116 PSI/0.3–0.8 MPa/3–8 bar		
Press Air Connection**			
Connection	G 0.3"/8 mm		
Not Lubricated Air Pressure	87 PSI/0.6 MPa/6 bar		
Dispensing			
Powder Dispenser	5		
Liquid Soap Supply	8		
Hydraulic Provision	6	1 x 1/2"	
Consumption (1)	Light soiled 140°F/60°C wash		
Without Electric Heating	1.8 kWh	2 kWh	2.1 kWh
With Electric Heating	17.5 kWh	–	–
Steam	0.24 $lbs.s^{-1}$/ 0.11 $kg.s^{-1}$	–	–
Working Conditions			
Ambient Temperature	41°F (+5°C) to 95°F (+35°C)		
Relative Humidity	30% to 90% without condensation		
Height Above Sea Level	up to 3280 ft/1000 m		
Storage Temperature	34°F (1°C) to 131°F (+55°C)		
Anchoring			
Max. Static Load on Floor	–	–	–
Max. Dynamic Load on Floor	–	–	–
Frequency of Dynamic Load	–	–	–
Noise			
Equivalent Noise Level L_{AEQ} (dB[A])	55/74 dB(A)	–	–

** Valid for washers which have water valves with air-operated control.

(1) Depends on cold and hot water supply temperature and wash program setup.

DIMENSIONS AND TECHNICAL SPECIFICATIONS

(Models MFS230 and MFS275 with Tilting Feature)



Dimensions and Connections

Washer Capacity	230 lbs (104 kg)	275 lbs (125 kg)
A	73.22" (1860 mm)	73.22" (1860 mm)
B	86.41" (2195 mm)	91.73" (2330 mm)
C	86.41" (2195 mm)	86.41" (2195 mm)
D	97.55" (2478 mm)	103.62" (2632 mm)
E	40.11" (1019 mm)	39.68" (1008 mm)
F	34.01" (864 mm)	33.97" (863 mm)
G	23.70" (602 mm)	24.64" (626 mm)
H	20" (508 mm)	18.97" (482 mm)
I	6.29" (160 mm)	5.9" (150 mm)
J	27.24" (692 mm)	27.24" (692 mm)

Technical Specifications (Models MFS230 and MFS275 with Tilting Feature)

	MFS230	MFS275
Washer Dimensions*		
Width	73.22" (1860 mm)	73.22" (1860 mm)
Depth	86.41" (2195 mm)	86.41" (2195 mm)
Height	86.41" (2195 mm)	91.73" (2330 mm)
Packing Dimensions		
Width	80.31" (2040 mm)	80.31" (2040 mm)
Depth	93.50" (2375 mm)	93.50" (2375 mm)
Height	97.63" (2480 mm)	97.63" (2480 mm)
Transportation Volume	425 ft^3 (12.01 m^3)	425 ft^3 (12.01 m^3)
Weight		
Net	7761 lb (3520 kg)	8444 lb (3830 kg)
Gross	8290 lb (3760 kg)	8951 lb (4060 kg)
Electrical Requirements		
Tilting system nominal motor output	–	
Protection	–	
Anchoring		
Max. Static Load on Floor	–	–
Max. Dynamic Load on Floor	–	–
Frequency of Dynamic Load	–	–

* Maximum dimensions, including protruding parts

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